Montana Outdoors

November–December 2005

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the MULEY from MARS

Why bucks and does are on totally different planets

High-mountain paradise

Elk Camp

EUREKA!

They've discovered what drives northwestern whitetail populations!

COUNCIL GROVE STATE PARK

"The Place of Tall Trees With No Limbs"

Montana Fish, Wildlife & Parks

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Luke Duran, Art Director
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NELSON KENTER

Montana Outdoors

NOVEMBER–DECEMBER 2005

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OPPOSITE PAGE: Situated on the Clark Fork River near Missoula, Council Grove State Park is home to stately ponderosa pines and an event in 1855 that forever changed the course of history in western Montana. Photo by Nelson Kenter.

COVER: A mule deer buck looks for does in late November. See page 18 to learn where these female deer have been hiding. Photo by Tim Christie.

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Pining for pintails

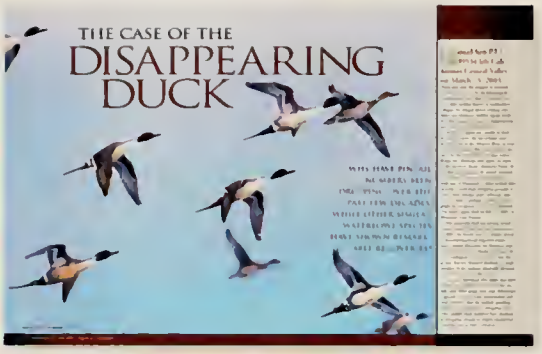
I was sorry to read in the pintail article ("The Case of the Disappearing Duck," September–October) that this beautiful duck has been having problems. I haven't hunted in many years, but I remember growing up in Billings and driving with my dad and brother to hunt pintails north of Malta. Like a lot of hunters, we usually went for greenheads, but the hunters in our family had a soft spot for pintails, too, and it was always exciting to have a few in the bag at day's end. Not only are they a beautiful bird, but they taste great. Let's hope waterfowl scientists can figure out what's hurting pintail populations and take the necessary steps to help them recover.

Bert Coniver
Fort Lauderdale, Florida

The recent article on pintails missed mentioning the impact Canada geese have had in taking over so much of the pintail's habitat. The goose population has been exploding over the years, and I think the pintails would have a much better survival rate if wildlife management agencies did more to increase the harvest of Canadas.

Tom Peets
Salmon, Idaho

Jim Hansen, FWP Central Flyway migratory bird coordinator, replies: *Though Canada goose numbers have increased in recent years, they have not been a problem for pintails. During the nesting season, pintails tend to use shallow wetlands where they can find food. In Montana, they nest mainly in the north-central and northeastern parts of the state. Canada geese, on the other hand, use a wide variety of habitats across Montana for nesting, including stock ponds, reservoirs,*



and rivers. While you may occasionally see the two species together during the nesting season, Canada geese don't chase pintails off a wetland, and the two don't compete for food or nesting areas. Also, if the two species are in the same area during migration and on wintering areas, competition for space and food is not a problem. In addition, most pintails winter farther south than Canada geese. Montana and other states already have quite liberal hunting regulations for Canada geese.

Tamarack or larch?

I certainly enjoyed Lori Micken's Outdoors Portrait on "Tamarack" in the September–October issue. We in northwestern Montana have a real love affair with our "deciduous conifers." I don't think the New England states have anything on us for fall colors; these trees are beautiful. These trees are not, however, tamaracks. They are western larches. Tamaracks are found in the northeastern region of the United States and Canada, and people from there typically misidentify our western larches as tamaracks.

Tamaracks are a relatively small tree and inhabit boggy ground (see page 41 of Stephen E. Arno's *Northwest Trees: Identifying and Understanding the Region's Native Trees.*) I have personally decided that if I live anywhere near where the larch grows, I'm in the right place.

Tom Gentry
Troy

Editor replies: *Mr. Gentry is correct, though many northwestern Montanans, regardless of origin, refer to their beloved larches as tamaracks. Bigfork holds its Tamarack Time festival in mid-October, and Seeley Lake's Tamarack Festival runs the last week of September. Readers interested in seeing a picture of Montana's national record western larch can view a photograph of this 153-foot giant on page 12 of "Montana's Trophy Trees," in our July–August 2003 issue.*

How many pieces?

My mouth began to water when I read the article on cooking duck ("Duck Done Deliciously," September–October). But I have one question: You write that butterflying a bird to prepare Kingman Duck requires cutting out the backbone and then flattening the carcass. So I assume the bird is still in one piece. But in the photograph of a duck being prepared Kingman Duck–style, there are two separate halves.

Marsha Carrington-Kent
Yakima, Washington

Editor replies: *Butterflying a duck or other bird does result in a single piece. It then can be cut in two along the breastbone to fit more easily on a small grill, as shown in the photograph. Some cooks like this method because the duck cooks a few minutes faster.*

At our house, we use duck and goose thighs by cutting off the meat and marinating the pieces overnight in teriyaki sauce. The meat then has a perfect flavor for use in a stir-fry the next evening. Thought your other readers would like to know.

R. David Henderson
Whitefish

■ We welcome your comments, questions, and letters to the editor. We'll edit letters as needed for accuracy, style, and length. Mail your letter to: *Montana Outdoors*, P.O. Box 200701, Helena, MT 59620-0701. Or e-mail us at: tdickson@mt.gov.

TOM DICKSON

"According to my new GPS, our elk camp is right over there by the Esteé Lauder counter."

Taking the Reins

Over the past six months, the situation regarding wolf management in Montana has changed—for the better. A new arrangement with the U.S. Fish and Wildlife Service (USFWS) gives Montana more control over its own affairs, including how wolves within the state's borders should be managed.

Early this past summer, the USFWS turned over most of the authority for Montana's recovered, but still federally protected, wolf population to the state. Montana can now carry out much of the wolf conservation and management plan that has been approved by state and federal officials.

During the past ten years, Montanans have worked to come up with a wolf management plan with the expectation that wolves would one day be delisted and managed like black bears, elk, and other wildlife. Unfortunately, the delisting of wolves in the Northern Rockies hasn't yet happened. That's due to disagreement between the USFWS and the state of Wyoming regarding assurances that the state's wolf management plan won't let wolf numbers drop too low. However, the situation now in Montana (and likely soon in Idaho, which is working on a similar agreement with the USFWS) is a positive one because it allows us to make important decisions about wolf management. The most important decision: whether or not to lethally remove certain wolves (according to federal guidelines) that are killing or harassing livestock.

Montana Fish, Wildlife & Parks

The new agreement also allows Montana to manage wolf numbers and distribution, help landowners reduce livestock depredation risks, and establish an independent source of funds to compensate for wolf-related livestock losses.

FWP is doing a lot right now to manage the roughly 150 wolves inhabiting Montana. We've hired a wolf management coordinator based in Helena and four wolf specialists in Kalispell, Bozeman, Dillon, and Red Lodge. They work closely with ranchers, FWP biologists, federal officials, and others to trap and radio-collar wolves, monitor the roughly 40 packs in Montana, learn more about wolf reproduction and predation, and reduce conflicts with livestock. That work will continue to be funded by the federal government until wolves are delisted.

We're hoping that day won't be long in coming. Thanks in large part to the patience, hard work, and cooperation of Montana's citizens, wolves are now fully recovered in this state and have once again become a part of the Montana landscape. It just makes sense for this state to fully take the reins of wolf management back from the federal government.

Of concern to many hunters is the fact that wolves kill elk. That's true, but wolves also prey on deer and other big game. Elk numbers around Yellowstone National Park have declined, and that's due in part to wolf predation. Yet in other areas of Montana where wolves and elk live together, elk populations are as healthy as ever.

Because some wolves kill livestock, we will need to lethally control some to reduce depredation (while finding new ways to prevent livestock losses). But we are committed to maintaining at least 15 breeding pairs (what we now have statewide) and working with ranchers to keep livestock losses as low as possible. In time, we hope to manage wolves as we do other large native predators such as mountain lions. As with lions, that management would include regulated hunting seasons, which don't threaten overall populations.

It's great that Montanans and others are so interested in wolves. But I hope they remember, too, that Montana is home to more than 500 different wildlife species. From a biological perspective, the wolf is just one of them.

—M. Jeff Hagener, *Director, Montana Fish, Wildlife & Parks*

NATURAL WONDERS

Q. *While fishing at dusk, I often see elegant birds with a white spot on each wing swooping gracefully yet erratically over the water. Are they some type of raptor?*

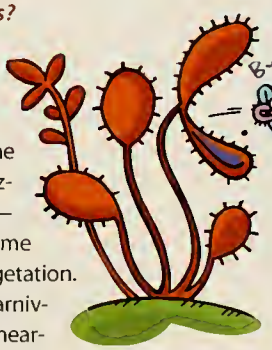
A. Those are nighthawks, which, despite the name, are not birds of prey. Found throughout the United States, nighthawks feed on moths, mosquitoes, caddis flies, and other insects. Territorial males can often be heard making a nasal buzz that sounds like *BEErzh*.

Q. *I've heard that FWP and other agencies maintain lands that are strictly off limits to the public? If so, why?*

A. The only public lands not open to the public are military bases and the like, which have restricted access for reasons of safety and security. Federal wilderness areas are not open to mechanized traffic, but all 3.4 million acres in Montana are open to public hiking, horseback riding, mountain biking, hunting, fishing, and camping. Some public lands, such as Bureau of Land Management parcels in southeastern Montana, are surrounded by private land and can only be reached with landowner permission (or by helicopter).

Q. *Is Montana home to any carnivorous plants?*

A. As if we didn't have enough to keep us on our toes—what with the rattlesnakes, grizzlies, and lions—Montana is also home to meat-eating vegetation. Fortunately, the carnivorous sundews (linear-leaved, English, and round-leaved), bladderworts (flat-leaved, lesser, and greater), and butterwort prey mainly on small flying or aquatic insects. These plants live either in cool fens (similar to bogs) or are rooted in marshes and shallow lakes, sending their leaves and flowers up to the surface.



Wonder about some part of Montana's natural world? You can e-mail us at: tdickson@mt.gov.

ILLUSTRATIONS BY PETER GROSSHAUSER

FWP discovers new Montana mammal

Ryan Rauscher had his fingers crossed all week. It paid off when he finally got the call in early September from field technicians telling him they had just discovered a northern short-tailed shrew—the first ever documenred in Montana.

Actually, there was more than luck involved in the landmark discovery. Rauscher, FWP's nongame wildlife biologist in Glasgow, had scoped out several sites in northeastern Montana werlands, where the technicians set a series of traps.

"We were hoping to catch arctic shrews and, if we got especially lucky, a northern short-tail," says Rauscher. "We set traps in moist meadows along marshes—habitats these species are known to use."

ANDREW MCKEAN/FWP

The recently discovered northern short-tailed shrew (left) is larger than the arctic shrew (center) and dwarf shrew (right).

The northern short-tailed shrew, also called the big short-tailed shrew, is common in the north-central United States and in south-central Canada, but never before had it been documented in Montana. Its discovery brings the total number of mammal species in Montana to 109.

A voracious insect-eater, the shrew was discovered on a federal waterfowl production area northeast of Plentywood. That location is about 90 miles farther south and 60 miles farther west than its previous known range in North Dakota.

The shrew was captured as part of a statewide effort to document the presence and distribution of various small mammal species. The project is funded by a federal grant that states use to manage a broader range of fish and wildlife species than they are currently able to manage.

"Fish, Wildlife & Parks is charged with managing all of Montana's 100-plus mammal species," says Rauscher. "One major purpose of these small mammal surveys is to see what's out there. If we don't know a species is there, or where it lives, we can't do our job."

Recently, FWP drafted a comprehensive fish and wildlife conservation strategy requested by the U.S. Fish and Wildlife Service. The strategy looks at the status and conservation needs of hundreds of Montana fish and wildlife species. Submitting the strategy will help Montana secure long-term federal funding to conserve and manage species, such as shrews, that fall in the conservation gap between the state's major game animals and those that are endangered.

The federal funds will help pay for further surveys in northeastern Montana, where Rauscher is sure other northern short-tailed shrews are scurrying beneath wet meadow grasses.

"My old boss used to tell me there's no such thing as a population of one," he says. "So we're definitely going back out there."

New elk conservation center to open

Consider it the Cabela's of elk conservation.

In November, the Rocky Mountain Elk Foundation will open its 12,000-square-foot Elk Country Visitor Center in Missoula. The education facility will feature world-class mounts, a 30-seat theater, and exhibits on elk, hunting, and wildlife conservation.

The aim of the multi-million-dollar facility, say RMEF officials, is to provide a venue for hunters to learn about their hunting heritage and share that story with nonhunters.

"Many people are unaware of the significant role hunters played in the North American conservation movement," says RMEF president J. Dart.

RMEF

Among the dozens of displays at the new elk visitor center in Missoula are full mount reproductions of trophy elk.

The new facility includes hands-on interpretive exhibits where visitors can hear the bleat of a newborn calf, bugle like a bull elk, and feel the heft of trophy elk antlers. Other displays contain reproductions of elk hunting and skinning tools used by early Americans, explain the importance of elk habitat, and tell the story of how modern hunters restored elk numbers across North America.

For more information, call the Elk Country Visitor Center at (406) 523-4545.

Fake wildlife, real infractions

The complaints late last November were common ones in Montana. East Helena Valley residents were calling FWP offices to report gunshots off Keir Lane after legal shooting hours. The callers said they thought the shots were aimed at mule deer moving down from the Spokane Mountain foothills after dark. Warden sergeant Mike Ottman responded by driving to the site of the alleged shootings during daylight and scoping out an area to set up what wildlife enforcement officials call "simulated wildlife," otherwise known as a decoy.

Ottman and game warden Dave Loewen found a safe spot for the full mount mule deer buck along the road where vehicle headlights would hit the decoy at a distance far enough to

NICK FUCCI/PHOTO.COM

Is that whitetail buck the real McCoy or just a decoy? Fish, Wildlife & Parks game wardens are betting illegal hunters can't tell.

allow a driver time to stop and observe the "deer." A remote-control swiveling head added to the decoy's realism. The wardens placed the decoy where stray bullets fired from the road would hit an earth backstop and not fly into the night sky.

After positioning the decoy, the wardens waited in a safe spot to the side where they could watch. Over the next several hours, roughly a dozen cars and trucks passed the decoy, slowed to look, and moved on. Then a vehicle stopped. The driver got out with a rifle. While standing in the road, he shot twice at what he thought was a live deer.

Loewen emerged from his hiding spot, identified himself as a Fish, Wildlife & Parks game warden, and told the man to drop his firearm. Then the wardens discovered that the shooter, who had illegally fired from the county road, didn't even have the right license for harvesting a deer in that hunting district.

FWP has been using decoy game animals since the early 1990s. The purpose, says Enforcement Division chief Jim Kropp, is to reduce incidents of unsafe and unethical hunting.

"There are those who call this entrapment, but it's not," says Kropp. "We're setting up illegal situations where some people will, given what they think is an opportunity, unlawfully attempt to shoot an animal."

Kropp notes that FWP publicizes its use of decoy wildlife. And wardens rarely use decoys with trophy racks, which could be construed as unfair enticement.

"For entrapment to occur, a law enforcement officer has to plant the idea in your mind and suggest that you perform the unlawful act," he says. "We don't do that. We're targeting people who are out looking for specific unlawful opportunities. This argument has gone through the courts many times, and judges continue to rule in our favor."

FWP runs decoy operations across the state year-round, though mainly during the hunting season. Kropp calls the operations "high risk and high liability," because they often involve shooting after dark near public roadways.

Ottman says wardens take extreme care when conducting decoy operations.

"We plan a lot beforehand," he says. "And we have at least two law enforcement officers involved to make sure there are no traffic problems or other circumstances that could lead to a situation getting out of hand."

Kropp says the decoy operations are worth the potential risk because they are efficient and effective. "In the past, a warden would have to find a buck near a road, then just sit and wait until perhaps someone came by and shot," he says. "With the decoys, we bring the warden, the potential target, and the shooter together all in the same location at the same time."

Another value of the decoy operations, says Kropp, is that "real animals don't have to die for us to catch a lawbreaker."

Decoys are deployed in what wardens call "problem areas"—those that have recurring illegal activities, such as where spike elk bulls are being killed in brow-tine-only areas, or on private land where ranchers call to complain about poaching.

"Usually when we hear that landowners are having problems, we get our there and set up a decoy," Kropp says.

In addition to deer and elk, wardens use decoy pronghorn, bears, bobcats, wild turkeys, and even pheasants.

Ottman says the fact that hunters now know fake wildlife are out there is the greatest value of the decoy program: "It's definitely a deterrent."

Recalling the several violators he and other wardens nabbed last November in the East Helena Valley, Ottman notes that word of the incidents spread fast.

"After that," he says, "complaints of illegal shooting along that road pretty much stopped."

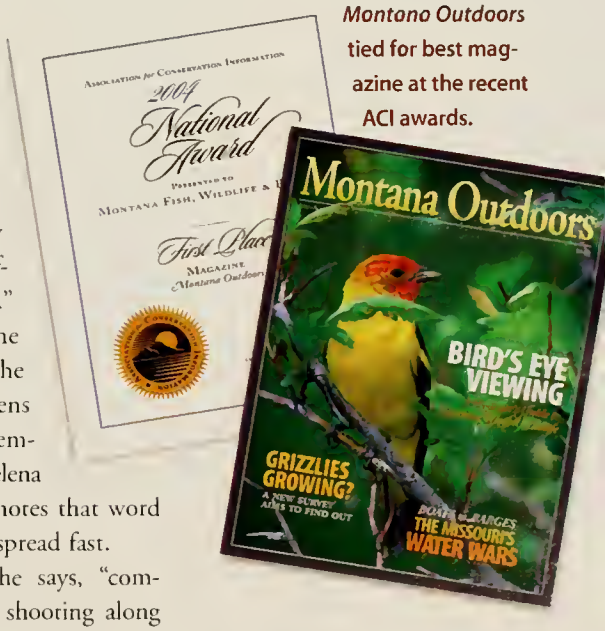
FWP's *Montana Outdoors* shares top conservation magazine award

At the 2004 Association for Conservation Information (ACI) awards ceremony held in July, *Montana Outdoors* tied for first place in the state conservation magazine category with *Texas Parks & Wildlife*.

This is the first time the FWP publication has received ACI's top magazine award.

In addition, *Montana Outdoors* won second place in the wildlife article category for "Chilly Reception," by FWP regional information and education officer Andrew McKean, Glasgow, and second place in the general interest article category for "Game Warden 'Glamour,'" by FWP Angler Education Program coordinator Dave Hagengruber.

Organized in 1938, ACI is a nonprofit organization of communicators for state, U.S., and Canadian conservation agencies and private agencies.



Montana Outdoors tied for best magazine at the recent ACI awards.

EYEWITNESS DRAWING OF THE 1855 COUNCIL GROVE TREATY BY GUSTAVUS SOHON.
NATIONAL ANTHROPOLOGICAL ARCHIVES, SMITHSONIAN INSTITUTION, WASHINGTON, DC

NORMA J. MAURINE/JACOBSON

THE TREATY LIVES ON

SOLEMN SITE The events at Council Grove 150 years ago changed the course of Montana history. The treaty signed there has been reproduced in bronze and is set in a memorial display at the state park.

Council Grove State Park

commemorates "the place of tall trees with no limbs," where Indian tribes reluctantly gave up most of their homeland 150 years ago. BY DARYL GADBOW

A pileated woodpecker flies up into the gnarled, broken crown of a centuries-old ponderosa pine. Like those of other ancients nearby, the pine's lower limbs have long rotted and broken off. In the Salish language, this site along the Clark Fork River, 10 miles west of Missoula, is known as *chilmeh*—"the place of tall trees with no limbs."

The woodpecker moves from tree to tree in search of insects, drumming a staccato beat on the tall trees' trunks. A century and a half ago, a similar sound emanated from among the old sentry pines at what is today Council Grove State Park. They were the echoes of drums, and they signaled a solemn occasion. Somewhere near the present park, in the summer of 1855, nearly 2,000 members of the Salish, Kootenai, and Pend d'Oreille tribes gathered to meet with Issac I. Stevens, governor of Washington Territory. There, they negotiated a treaty that would forever change the Indians' lives.

"We had a good way of life before the treaty, where everything was in order," says Johnny Arlee, a Salish tribal elder and cultural advisor for the Confederated Salish and Kootenai Tribes' Health and Human Services Department. "The treaty took away our homeland and a social system that worked for us."

Father Adrian Hoecken observed that Indian society firsthand. A Jesuit priest present at the treaty council 150 years ago, Hoecken wrote letters describing the scene of the historic treaty negotiations.

"Indian warriors from all the tribes of the great Flathead Confederacy rode over the plains and mountains to a powwow with Governor [Stevens]...." The rendezvous, he wrote, "lay along the flats of a wide, swift river swollen from recent summer rains. It was a biannual battleground of Blackfeet and mountain Indians, the passageway through the Rockies called the Gate of Hell....There, under a clear sky and ringed by mountains, with the prim military tents of the whites facing the humbler Indian teepees, the Flatheads [Salish], Kootenais, and Pend d'Oreille fought a stubborn diplomatic battle for their ancestral lands."

On July 16, 1855, after a week of contentious negotiations, leaders of the three tribes reluctantly signed an agreement with the U.S. government. Called the 1855 Treaty of Hellgate, the agreement altered the course of history in western Montana.

Relinquish a homeland

The treaty set the stage for ending the tribes' seasonally mobile way of life. For thousands of years, the Indians had moved around the region to sites rich in plants and wildlife important for medicine and food. But by signing the federal document, the tribes relinquished to the U.S. government the bulk of their aboriginal homeland, an area of about 21,000 square miles (most of today's western Montana). The three tribes, which the treaty combined into what became known as the Confederated Salish and Kootenai Tribes, also agreed to consolidate on a 2,000-square-mile reservation in the Flathead Valley.

Stevens, the U.S. government's ambitious 37-year-old representative, had clear orders from the nation's capital to settle the "Indian question" in Washington Territory.

Under Stevens's direction, the route for a railroad to the Pacific Coast, which would open the door to increased white settlement, had been surveyed in 1853 and 1854. It crossed lands long inhabited by several American Indian tribes, which at the time were considered by the U.S. government as independent, sovereign nations.

Stevens was charged with weakening that sovereignty and doing it quickly. In 1854, he concluded a treaty with several tribes in the Pacific Northwest. The following year, he set out to do the same with other tribes in the region, including those in today's northwestern Montana.

Different expectations

According to Robert Bigart, co-editor of *In the Name of the Salish and Kootenai Nation* (a textbook on the Hellgate Treaty used by Flathead Reservation school districts), the tribes that gathered at Council Grove in 1855 had vastly different expectations for the treaty council than Stevens did. The tribes expected to receive assurances that the U.S. government would provide protection from their old enemy, the Blackfeet Tribe, in their common buffalo hunting grounds of eastern Montana.

"The tribes thought they would talk about arranging peaceful access to the buffalo herds," says Bigart, director of the Salish Kootenai College Press. "But Stevens was there to get the Indians onto a reservation and open up a transportation route to the West."

Stevens grouped the Salish, Kootenai, and Pend d'Oreille together as a single "confederacy," even though the three tribes had significantly different homelands and customs. The Salish homeland was centered in the Bitterroot Valley; the Kootenai lived in today's northwestern Montana; and the Pend d'Oreille's ancestral home was in the Flathead Valley and the country to the west. A small area around Missoula was the only territory shared by all three tribes.

The Indians were surprised when the territorial governor's treaty proposed to place the three tribes on one reservation. Not surprisingly, they disagreed over the location. Alexander, chief of the Upper Pend d'Oreille, and Michelle, chief of the Kootenai, favored the Flathead Valley reservation site. But Salish chief Victor resisted Stevens's plan, insisting that his people be allowed to stay in the Bitterroot Valley. In return for signing the treaty, Chief Victor received assurances from Stevens that the U.S. president would survey the Bitterroot to determine its suitability as a reservation for the Salish. The promised survey, however, was never conducted.

Roughly 275 Salish refused to leave the Bitterroot Valley for several decades after the Hellgate Treaty was signed. They established farms in the area and stayed until forced to move to the Flathead Reservation in 1891.

"Victor never intended to give up the Bitterroot," says Julie Cajune, a tribal member developing an American Indian history curriculum for Salish Kootenai College. "He believed it would be surveyed and there'd be two reservations, with the Salish remaining in the Bitterroot."

Cajune notes that in addition to the entire concept of treaties being foreign to the Indians, the treaty negotiations were complicated, and the tribes were frustrated by the language barrier.

"There were a lot of problems with translation," says Cajune. "And the Indians at the council didn't know all the ramifications of signing the treaty. They went in thinking it would solve some competition and animosity with other tribes."

Binding agreements

Though the 1855 Hellgate Treaty resulted in a great loss for the Indians, the document has been valuable over the years as recognizing and granting specific rights to the Confederated Salish and Kootenai Tribes. In agreeing to the treaties, the tribes became a "domestic dependent nation" under federal law. Courts have consistently held that Indian treaties are binding agreements entered into by the federal government in return for permanent land cessions by the tribes. In these documents, the federal government recognizes the limited sovereignty still held by American Indian tribes.

Vernon Carroll is FWP's state parks interpretive specialist for Montana's west-central region. He says attorneys for the state and the tribes have in recent years referred to articles in the treaty (in combination with state claims of authority) as the basis for a joint state and tribal agreement to manage nontribal hunting and fishing on the Flathead Reservation. Another example of the treaty's vitality today, Carroll says, is that its provisions for protecting the tribes' fishing rights were cited in the recent federal Environmental Protection Agency decision to remove

Daryl Gadbow is a freelance writer in Missoula.

COUNCIL GROVE STATE PARK

On Saturday, August 13, 2005, members of the Salish, Kootenai, and Pend d'Oreille tribes gathered at Council Grove State Park to honor their ancestors who signed the 1855 Hellgate Treaty at the same site 150 years before.

Those who wish to read the treaty in its entirety can visit the memorial at the park or go to csktorg and look under "Government" then "documents." To purchase a copy of *In the Name of the Salish and Kootenai Nation*, send a check for $16.95 (includes shipping and handling) to: Salish Kootenai College Press, PO Box 70, Pablo, MT 59855.

VERNON CARROLL/FWP

MIXED EMOTIONS Salish tribal elders who spoke at the August 13 event mourned the lo of tribal territory yet were grateful to their ancestors for securing some land in perpetuity.

Milltown Dam on the Clark Fork River.

"The Clark Fork runs through the historic homelands of all three tribes, making it important to tribal members," he says.

Because of their treaty rights, the tribes also received millions of dollars from the Bonneville Power Administration in mitigation for fish and wildlife habitat lost when Hungry Horse Dam was constructed on the Flathead River in the 1950s.

Honoring the tribes

In 2003, Montana honored the tribes by agreeing to the Indians' request to cast the treaty in bronze and place it in a memorial at Council Grove State Park.

"When the tribes installed the memorial, they told us they were proclaiming that this site continues to be important to them," says Doug Monger, head of FWP's State Parks Division. "We feel it's important to provide opportunities for park visitors to learn about the treaty and this location and all it meant to changing the lives of those who came before us."

According to Lee Bastian, FWP west-central region state parks manager, Council Grove State Park was created in 1978 when FWP acquired 186 acres of Clark Fork River bottomland from the George Duseault family. "We had recognized for years the importance of preserving the site because of its historical significance," Bastian says.

For years, the park's only acknowledgement of that history was a small, inconspicuous plaque. That changed in 1999 when Cajune, then coordinator of the Ronan school system's Indian Education Program, was teaching a class at the park. While talking to students about the native perspective of the Lewis and Clark Expedition, Cajune noticed the small treaty plaque.

She was shocked, she says, that the old sign incorrectly stated the tribes had given up their hunting and fishing rights in the treaty. (Article 3 of the treaty reserves to the tribes the rights of hunting, fishing, gathering, and grazing on open and unclaimed lands off the Flathead Reservation but within their home territory.) Members of the Salish and Kootenai Tribal Council were equally surprised when Cajune told them about the sign. Tribal elders met with Bastian, and by the following year, plans were under way to create a memorial.

Cajune became the primary organizer of the tribes' memorial project at the park. She consulted with Salish and Kootenai elders and the tribal culture committees to learn what they wanted on the memorial.

"People immediately wanted the display to tell everything—our story from time immemorial," she says. "But that wasn't realistic. We finally all agreed that the entire text of the treaty definitely needed to be part of the memorial."

> Cajune was shocked that the old sign incorrectly stated the tribes had given up their hunting and fishing rights in the treaty.

All 12 articles of the treaty, cast in bronze, became the central panel of the three-panel memorial, mounted on a stone foundation.

The other two panels describe the tribes' history before and after the treaty. One panel shows a map of aboriginal homeland territories without state borders. Drawn by a tribal artist using old maps of aboriginal homelands, the memorial map is intended to dispel a myth about the tribes. In the past, says Cajune, some state and federal officials have referred to the Indians as "nomadic," loosely defined as "wandering aimlessly," in order to refute tribal claims of home territories.

"The fact is," says Cajune, "the Salish, Pend d'Oreille, and Kootenai had seasonal movements, passed from generation to generation, where they lived, hunted, or gathered. It was not random wandering. That's why the map includes different pictures of the specific plants and animals that drew people to those specific locations."

Other pictures on the memorial panel tell the tribal legends of creation. "We hope they show the general public that this area was an ancient tribal world," Cajune says.

The third panel on the memorial explains contemporary Indian issues related to the history of the treaty, such as why the tribes have the right to control the natural resources on their reservation.

Despite the tribe's satisfaction in setting the record straight, there was little celebrating when the memorial was officially dedicated in October 2003.

"For many of us, the dedication was a solemn occasion," says Cajune. "It was a very emotional thing for a lot of people. I know it was for me."

Tribal elder Johnny Arlee spoke a prayer at the dedication and then related the

Bitterroot memories

The Salish consider the Bitterroot Valley, today one of Montana's fastest-growing areas, as their tribal homeland. Many maintain that Victor, the chief representing the Salish at Council Grove, was misled by the U.S. government into leaving the valley and joining the Kootenai and the Pend d'Oreille tribes on the Flathead Reservation.

Johnny Arlee, a tribal elder, recalls how as a young man he took trips to the valley with his great-grandmother to collect bitterroot, the roots of which have been boiled and eaten by Indians for centuries. Arlee's great-grandmother had been a girl during the time of Chief Charlo (Victor's son), who had resolutely remained in the Bitterroot Valley with a few hundred Salish until being forced out in 1891. Collecting and eating bitterroot was an important part of her cultural heritage, Arlee says, a link to a time when the Salish lived freely along the river.

One day in the mid-1970s, Arlee and his great-grandmother arrived at a traditional bitterroot gathering site and found it gated, with a sign saying "No Trespassing."

"We found the landowner and asked if we could gather bitterroot," Arlee says. "He refused."

Arlee says he still remembers driving back to the Flathead Reservation with his great-grandmother, then in her 90s.

"She was so sad," he says. "Sad to lose something that had been so important to her."

history of the 1855 council. Cajune says she had mixed emorions afterward.

"On one hand, I'm forever grateful that our ancestors were able to save even a small piece of our traditional land," she says. "But when Johnny ralked that day, and the singers sang, I felt a sense of what our ancestors went through when they lost so much of their beloved homeland."

Today, students on the Flathead Reservation study the history of the 1855 Hellgate Treaty and what it means to residents of the reservation. Cajune says she hopes other teachers in western Montana take their students to Council Grove State Park to learn about the treaty and its historical significance to the state.

Council Grove today

When school groups and others visit rhe park, they find a place that looks much like it did 150 years ago. As in 1855, the site contains a broad grassland meadow along the Clark Fork River, ringed by weathered ponderosa pines and mature cottonwoods. It's still an inviting setting for large gatherings.

Bastian says Council Grove is designated as a "primirive" state park, meaning that FWP limirs development to preserve its natural characteristics. Besides the memorial, the only faciliries are a gravel enrrance road, a small parking lor, a half-dozen picnic sites with tables and fire rings, a restroom accessible to people with disahilities, and a few well-defined foot trails.

An island covered with willows, wild roses, cottonwoods, and pines makes up most of the park's acreage. In summer, visitors can easily reach the island by wading a shallow channel of the Clark Fork. Part of the mile-long island is managed by rhe U.S. Forest Service as part of the Lolo National Forest.

In addition to being an important historic site, the park hums with quiet recreational activity.

"Many people go to the park because it's an open, natural area," says Bastian. "It also provides good access to the Clark Fork River. From Missoula, you can be there in 25 minutes and enjoy the wonderful scenery.

> Unfortunately, that history is so bittersweet that some tribal members still find it difficult to visit the state park.

The whole park is such a neat spot. People who go there can really unwind."

Those who visit the state park in spring are likely to see other visitors glued to their binoculars, studying the variety of birds arrracted to Council Grove's riparian habirar. In summer, expect to see people splashing in the Clark Fork River, picnicking on sandbars, fishing, strolling in the shade of rhe cottonwoods, and riding horses.

In the fall, bowhunters are allowed into the park for a few weeks to stalk the river bottom's prolific white-tailed deer. Waterfowlers set up decoys and blinds in the park's backwaters and sloughs.

Rapidly encroaching residential development on nearby land and the gradual loss of the ponderosa pines to age are the main threats to the park.

"Housing developments around the park are a major concern," Bastian says. "For a long time, Council Grove has been surrounded by open agricultural fields, which help creare the feeling that it is actually bigger than ir is. That changes when houses start popping up."

As for the pines, Bastian says they are an essential element of the park's history and cultural significance.

"Unfortunately, we've lost some of those big old ponderosa pines to windstorms over the years, and there's not a lot of regeneration," he says.

Missoula groups such as the YMCA, Boy Scours, and local schools use Council Grove for nature and recreation programs. FWP and other agencies frequently schedule interpretive natural history and cultural activities at the park. Cajune says the Salish and Koorenai tribes plan to use Council Grove to make interpretive presentations on the history of the Hellgate Treaty.

Members of the Confederated Salish and Kootenai Tribes say it's important to have a sanctioned site where they can tell others about their history. Unfortunately, that history is so bittersweet that some tribal members find it difficult to visit the state park.

"Some people have told me they can't go to the memorial," says Cajune. "It would just be too sad for them, too overwhelming. So yes, it's good that this site has been preserved as a state park. And yes, we have a deep love and attachment to the land that was saved for us. But to many members of the tribe, this is also hallowed ground, the site of a great loss."

IF YOU GO

Open: Year-round.

Directions: The park is 10 miles west of Missoula. Take I-90 to the Reserve Street Exit, and then head 2 miles south on Reserve Street. Turn right on Mullan Road, and then go 10 miles west.

Facilities: This is a primitive park. Other than the memorial display, it contains only drinking water, a vault toilet, and a few fire rings and picnic tables.

Activities: Historical learning, fishing, picnicking, swimming, bicycling, bird watching, hunting (in season).

For more information: Call the FWP regional parks office at Missoula (406-542-5500) or go on-line to fwp.mt.gov.

JEFF VOGEL

Visitors read the historic treaty at the park's memorial display.

Who Calls the Shots?

By Thomas Baumeister and Tom Dickson

To hunt in Montana is to be faced with a whole lot of things you can do and a fair number you can't.

For example, hunters can hunt for five months each year, hunt for more than 20 game species, and hunt on more than 22 million acres of public land.

But unauthorized hunters can't hunt on Indian reservations. And no one may hunt ducks or geese without a federal migratory bird stamp, hunt any species in Glacier National Park, or hunt grizzlies anywhere in Montana.

Why is hunting restricted in some places and not others? More to the point, why can the state call the shots regarding wildlife management (including hunting opportunities) in some cases, yet the federal government and Indian tribes can trump state authority in others?

Most hunters don't give these questions a second thought. But they are worth pondering, because the answers lie at the heart of America's unique system of wildlife management. Over the past century, hunters and other concerned citizens have struggled to find the right balance of state, federal, and other authority over wildlife. Those struggles continue today, in court cases and legislation that could shift the balance of authority in ways that some argue are unfair, undemocratic, and even unconstitutional.

Most hunters this time of year focus their attention on deer, elk, and other game animals—not weighty legal or philosophical issues. Yet the hunting season can also be a time for reflection and discussion on why hunters are able to do some things but not others. And on how ongoing legal and legislative battles could affect the wildlife management authority of federal and state governments, and what that means to the future of wildlife management.

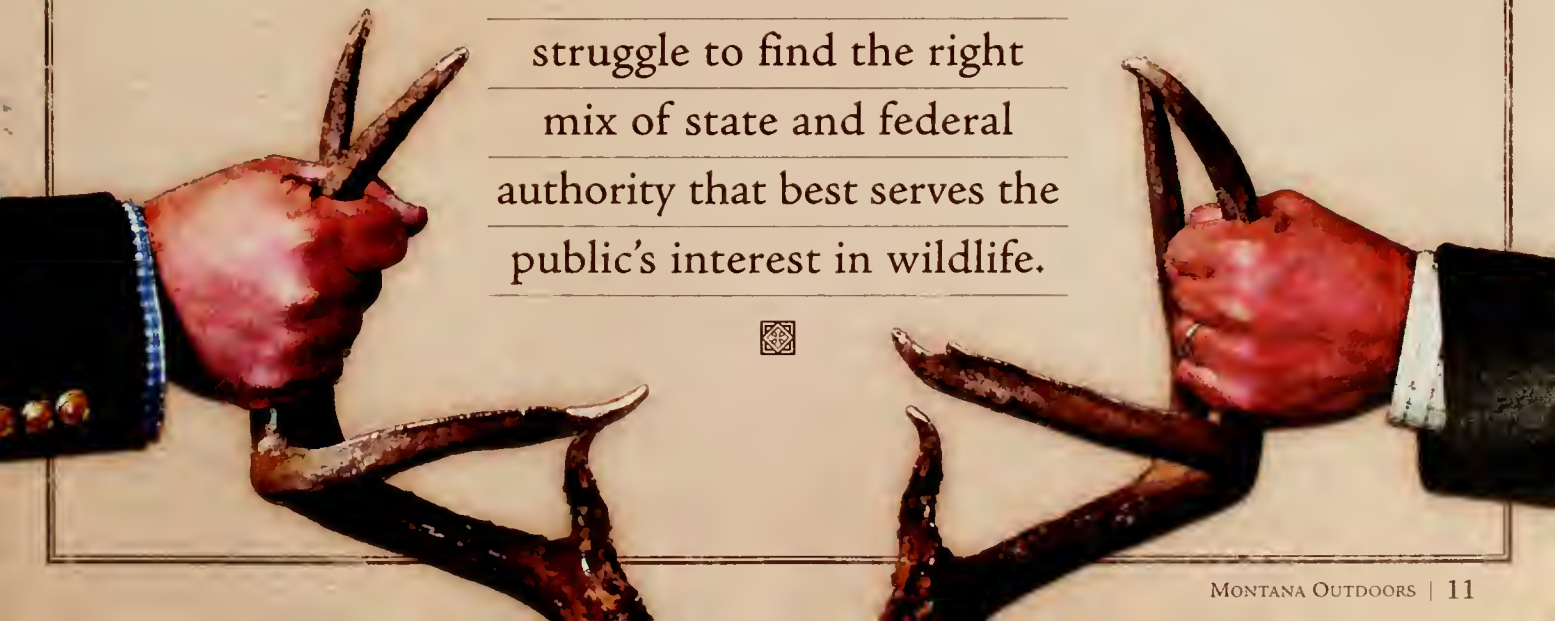
One of the founding principles of wildlife management in the United States is that no one owns wildlife. Put another way, everyone owns wildlife equally (though not "owning" it in a strictly legal sense, like a person would own a car or a house).

The concept has its roots in ancient Roman law. Under the legal codes established by Emperor Justinian (AD 529), wildlife and other natural resources could not be owned by anyone until it was captured and reduced to possession. For example, no one owned the fish in a lake. But if you caught a fish, it was considered yours.

The concept changed in England during the Middle Ages when various kings declared that people could be punished, even killed, for hunting on royal property. Ownership of wildlife and other public resources remained under the king's authority. Though wildlife was considered in public ownership, only the king could decide who had access to that wildlife, granting or selling it to those of privilege and wealth.

By the 15th century, however, some people in England began to rebel against the crown. The rebellion grew out of religious strife and persecution, which eventually led to a rejection by the public of royal prerogatives and wealth. This rebellious spirit led to the idea that

> The courts continue their struggle to find the right mix of state and federal authority that best serves the public's interest in wildlife.



natural resources should be owned and controlled by the general public. Centuries later, the concept would characterize the American attitude toward wildlife.

In America's early years, the question of who had authority over wild animals rarely came up because there appeared to be enough wildlife for everyone to use. But by the late 19th century, the growing human population began to compete for what previously had seemed to be limitless natural resources.

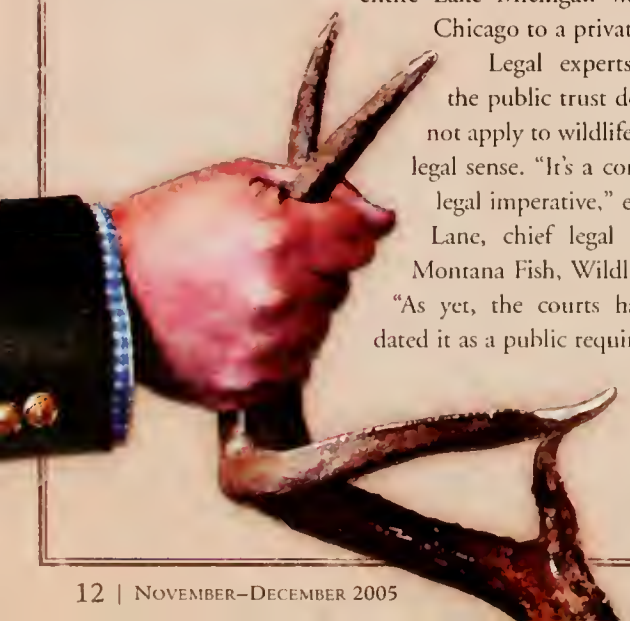
Several landmark court cases in the 1800s shaped Americans' thinking about wildlife management responsibilities. The first was *Martin v. Waddell* (1842), in which a landowner along the New Jersey coast tried to exclude others from harvesting oysters in the mudflats of his property. Martin claimed that he owned the seashore based on a land grant from the king of England made before the United States declared independence.

The case went to the U.S. Supreme Court, where Chief Justice Roger Taney ruled the king could not grant or give away property held "as a public trust," and that "since the revolution, the people of each state became themselves sovereign; and in that character, held the absolute right to all their navigable waters, and the soil under them; for their own common use...including the animals living on it."

Taney's decision became known as the "public trust doctrine." The concept, upon which wildlife has since been managed and regulated in the United States, maintains that the government holds natural resources in trust for its citizens, and that wildlife should not be privately owned.

Another important ruling that helped frame the public trust concept came in 1892 with *Illinois Central Railroad v. Illinois*. Here, the Supreme Court ruled that a state can't sell off natural resources held in the public trust—in this case, Illinois's attempt to sell nearly the entire Lake Michigan waterfront of Chicago to a private railroad.

Legal experts note that the public trust doctrine does not apply to wildlife in a strictly legal sense. "It's a concept, not a legal imperative," explains Bob Lane, chief legal counsel for Montana Fish, Wildlife & Parks. "As yet, the courts haven't mandated it as a public requirement."



Though not legally binding, however, the idea that government doesn't own wild animals but is entrusted with conserving wildlife for the benefit of all citizens is pervasive.

"The public trust doctrine is the basic model used for state and federal wildlife laws," says Lane. "It's a concept that seems reasonable and logical to most people, but so far no such case has come before the courts."

Most people agree that government should be entrusted with managing wildlife for the public good. But which government? Though state, federal, and Indian governments all have trustee responsibilities for wildlife, debate continues over how those responsibilities are balanced.

Generally, the states have primary management authority for wildlife, with several exceptions. The Supreme Court has granted tribal authority on some lands for some purposes, subject to treaty rights. Another exception is the federal Endangered Species Act, under which certain species may not be hunted. And then there are national parks, where hunting is not allowed.

Generally, the states have primary management authority over wildlife. But there are several notable exceptions.

The federal government also has authority over migratory birds as part of the Migratory Bird Treaty of 1916, which the U.S. government entered into with Canada, Mexico, and Russia. This treaty provides the U.S. Fish and Wildlife Service with nearly complete control over the hunting of ducks, geese, swans, and other migratory birds.

In some cases it's commerce, not conservation, that has challenged aspects of state management authority over wildlife. The Supreme Court ruled in 1947 that South Carolina could not charge out-of-state commercial boats 100 times higher shrimping fees than it charged resident shrimpers. The high court cited the U.S. Constitution's commerce clause when it said it is unconstitutional for states to preclude nonresidents from engaging in interstate commercial activities.

State conservation agencies have long eyed the commerce clause nervously, because it threatens their traditional management authority to limit the number of licenses they sell to out-of-state hunters and to charge nonresidents more for licenses than residents. (On the other hand, some argue that the commerce clause helps keep overly protective states in check and ensures that public resources are managed fairly for all American citizens.)

In 1978, the Supreme Court favored the states when it ruled that Montana could charge nonresident elk hunters higher fees than residents. Montana argued in *Baldwin v. Fish and Game Commission* that nonresidents require more enforcement effort

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Thomas Baumeister is chief of FWP's Education Bureau.
Tom Dickson is editor of Montana Outdoors.

(because they don't know the landscape as well) and that residents pay through taxes for infrastructure such as roads, fire control, and search-and-rescue efforts that nonresidents aren't funding.

The court found support for its conclusion because it viewed hunting as a recreational privilege and not a fundamental right as granted by the Constitution. But the court also gave warning that the disparity between resident and nonresident hunting and fishing fees could not be unreasonably high.

State regulatory authority over wildlife was challenged recently in an Arizona case called *Conservation Force v. Manning*. In 2004, the court ruled that Arizona's system of limiting the number of nonresident elk and deer licenses discriminated against interstate commerce and therefore was unconstitutional. Because the nonresident hunters who sued the state's wildlife agency planned to sell elk hides and antlers in another state, the court determined that the products were "articles of commerce" covered by the commerce clause.

The court's decision sent shock waves through state conservation agencies. After the ruling, the lead plaintiff and his attorney met with directors of several other state conservation departments, including Montana Fish, Wildlife & Parks, and threatened to sue. So far, no suit has been brought against Montana, but the parties have filed suit against three other states.

Recently, state conservation agencies got relief in the form of a bill introduced by Nevada senator Henry Reid at the urging of the International Association of Fish and Wildlife Agencies. The Reaffirmation of State Regulation of Resident and Nonresident Hunting and Fishing Act of 2005, which was passed by Congress and signed into law this year, says states may differentiate between residents and nonresidents when setting seasons, allocating permits, and pricing licenses.

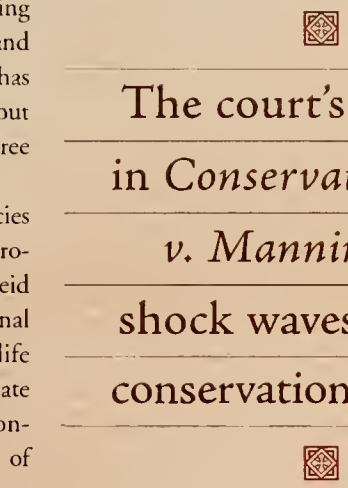
Montana and other states cheered passage of the bill. However the federal law may open up a new can of worms by emboldening some groups or states to consider further restrictions on nonresidents. At least one national hunting group has announced it considers the new federal legislation unfair to nonresidents.

Because Congress and the courts are in two separate branches of government, the judiciary isn't bound to uphold the new legislation. But in recent court cases it has, and for the time being, the "Reid Law" seems to have effectively countered the commerce clause strategy used to weaken states' authority to regulate wildlife within their borders.

Restricting licenses and charging higher fees to nonresidents come under a state's authority—granted as part of its obligations to meet its public trust responsibilities—to control who can "take" (capture, kill, or otherwise affect the well-being of) wildlife. To manage wildlife for the public good, states pass laws and regulations that control the place, time, and manner of taking. That's why, for example, big game hunters in Montana must immediately attach a possession tag to their kill.

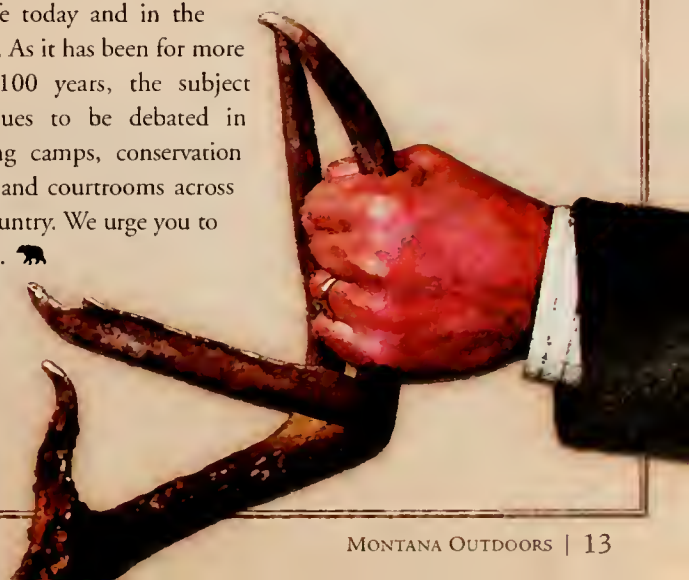
Tagging is just one condition the state sets for pursuing and obtaining possession of a big game animal. These conditions—also known as hunting regulations—are set to ensure equal opportunity, public safety, and the conservation of wildlife populations. Another condition is that hunters must pursue animals in a certain manner (such as within season frameworks and during legal shooting hours). Yet another is that hunters can't sell the meat from or waste dead game animals.

Perhaps the most unique condition required by the state is that a hunter actually has to work to possess a big game animal. Under the American hunting system, possession is not granted by the grace of a sovereign or other ruler but is earned through personal effort. The idea that labor leads to possession traces back to the Roman era and has been the cornerstone of this country's relationship with wildlife. To legally possess a wild animal, you have to obey the regulations, hunt the animal, and then kill the animal yourself. This is known as the rule of capture.



The court's decision in *Conservation Force v. Manning* sent shock waves through conservation agencies.

Americans, who highly value self-reliance, have long supported the rule of capture. But there's less agreement on other aspects of wildlife management. Since this country was founded, citizens have struggled with conflicting impulses regarding wildlife: to possess it for themselves while sharing it with others, to use wildlife today while conserving enough for their grandkids, to maintain local control over some species and conditions of management while granting federal authority over others. The challenge is finding the right mix of federal, state, and other authority to best serve the public's interest in wildlife today and in the future. As it has been for more than 100 years, the subject continues to be debated in hunting camps, conservation clubs, and courtrooms across the country. We urge you to join in.



Trend Spotters

When FWP biologists count wildlife, they're learning which direction populations are moving.

BY DAVE CARTY

Jerry Brown has been in this helicopter since shortly before sunup. It's his second straight day of flying the west Cabinet Mountains, and the FWP wildlife biologist is getting ready to call it a day. Thirty-two years of surveying wildlife from helicopters and airplanes will do that to a person. Below him, a group of mountain goats scrambles for cover, and Brown signals for the FWP pilot in the seat next to him to bank and then circle in for a closer look. The goats scramble up out of the basin then over the ridgetop.

"We're looking for kids," he says. "That way we can determine this year's reproductive success."

Each summer on the last week of August, Brown flies a prearranged route through the Cabinets: one side of the mountains one year, the other side the next. He and the pilot look for black and grizzly bears in the open huckleberry patches and for mountain goats on the cliffs above. Brown says renting helicopters is expensive; to save the department money, he schedules surveys covering more than one species.

He's looking for young goats, but Brown is also counting every adult goat he can see—though he knows he can't see them all.

"We're assessing the population we see, which may be only half the goats or bears in the area," he explains. "I'm not concerned with trying to assess that there are, say, exactly 114 goats in an area. Instead, I'm trying to determine trends. For example, if I'm seeing 100 goats one year, and then four years later on the same route I see only 70, and then four years after that maybe the number is 50, then I'm pretty sure the population is on a downward trend." (For the record, Brown's surveys show that the Cabinet Mountain's goat population has been increasing slightly over the past decade.)

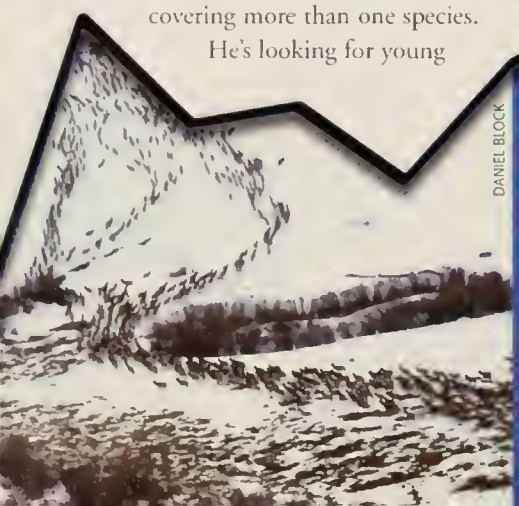
Wildlife population surveys and surveys of hunter harvest are the foundation of wildlife management. The information is used by biologists to relate population trends to changes in habitat and hunting pressure. It's also gobbled up by hunters hungry to improve their success or understand past hunting successes and failures.

Because it's such an important part of wildlife management, FWP's population monitoring comes under intense scrutiny by hunters. Some wonder why the department needs to know how many deer, elk, and other animals are out there. Others want biologists to make more thorough counts. And some hunters may not believe the department's population estimates, especially when those numbers don't correspond with hunters' observations afield.

"We get calls from hunters wondering why they are seeing fewer deer in their hunting area when our biologists say the population appears to be going up," says Ron Aasheim, who heads FWP's Communications and Education Division. "We can understand why that's frustrating, and we know that it's because hunters are so concerned about wildlife in this state. But it gets down to trust, and hopefully most hunters believe that we're as committed to managing Montana's wildlife as they expect us to be."

Why trends?

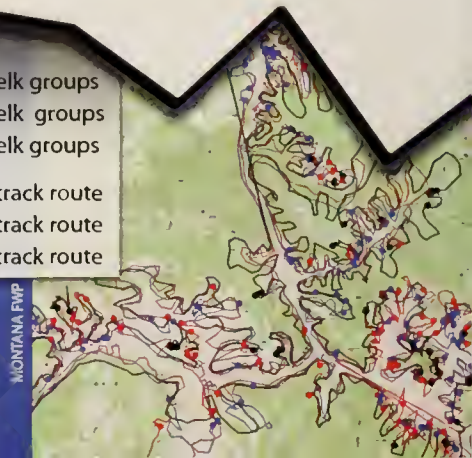
Back on the ground, Brown plugs the day's tally into a computer. He could make these



DANIEL BLOCK

SKY COUNTS

Most FWP surveys are conducted from the air, where biologists get a better view of the landscape and wildlife (left). The map at right shows FWP aerial track routes flown over the Gravelly Mountains for three years. Biologists fly routes where, historically, they know elk congregate in mid-winter. To ensure they gather consistent data, biologists fly survey routes in the same areas each year.



JERRY BROWN/MONTANA FWP

GOING TO EXTREMES To count mountain goats, some biologists strap on a backpack and head up a mountain to check remote areas that aerial surveys might miss.

BRENT & DELLA LONNER

calculations by hand, but the computer lets him rapidly compare past counts with information from hunter harvest questionnaires, check-station records, notes on the herd's age structure, production estimates, post-season hunter surveys, and, for deer and elk, ground counts. All are pieces of a picture.

"You never use just one thing to tell you what's going on out there," Brown says.

His goal is to arrive at a trend in the population: up, stable, or declining. FWP bases nearly all its management decisions on trends, not precise population counts.

Understandably, some hunters and landowners want hard, cold figures: Exactly how many (fill in the blank) are out there? To a man in Brown's line of work, such questions can be frustrating.

"You can't answer that," he says, "It's impossible to know exactly how many deer are living in a particular district. What we try to determine is which way the population is moving. That's what's important."

Reflecting their constituents' concerns, however, some lawmakers want more accurate information. During the 2003 session, the Montana legislature passed a bill mandating FWP to provide exact population estimates of all big game species to the best of its ability using a variety of sources. The department is meeting the new requirement by improving how it combines harvest statistics, aerial surveys, and other population estimation techniques to generate more accurate numerical estimates.

In Montana, almost every game species is surveyed, tabulated, analyzed, and cross-referenced against long-term trends (see sidebar, page 17). Biologists crunch numbers for elk, deer, pronghorn, goats, sheep, bears, and moose, along with furbearers, geese, pheasants, ducks, and sage grouse. Typically, they count wildlife in the same areas and at the same time each year. Biologists conduct most surveys from the air, but some are done by ground crews.

The pheasant crowing count is one survey that makes headlines every year. Each spring, wildlife biologists and technicians drive established routes and stop at predetermined sites. They listen for a set period of time, counting the number of roosters they hear crowing, then drive to the next stop. The crowing counts don't tell biologists exactly how many roosters are in a given area. Instead, they show upward or downward trends from year to year.

How it's done

In some cases, biologists extrapolate surveys in small areas to arrive at a fairly accurate rangewide population estimate, much rhe way pollsters measure public opinion by sampling a small percentage of households (called representative samples).

In the case of Montana's mule deer, biologists intensively survey 13 "census" areas scattered across a variety of habitats. Biologists then compare the highly accurate census area information to 67 "trend" areas, which are less intensively surveyed but represent a more complere picture of mule deer habitats statewide. With the census areas as their representative sample, biologists use computer models to estimate the

DEA VOGEL

LOOK AND LISTEN When counting hard-to-spot wildlife species, FWP biologists count tracks, calls, or other indicators. For example (from left to right), biologists and technicians listen for pheasant rooster crows at established listening stops, examine DNA in grizzly bear hair strands left on barbed wire surrounding lure stations, and count the tracks of mountain lions and other furbearers in snow.

MONTANA OUTDOORS

KERRY T. NICHOLS

One of the biggest challenges facing FWP biologists is earning the trust of hunters whose observations differ from what surveys indicate.

population size, age, and sex composition in the trend areas. From this they get an accurate snapshot of the state's mule deer herds, as well as the information used to monitor population swings and adjust harvest goals.

Different perspectives

One of the biggest challenges facing biologists is earning the trust of hunters whose observations differ from what surveys indicate. In northwestern Montana, for instance, many hunters believe the whitetail population has not sufficiently recovered from the brutal winter of 1996–97. By tracking deer trends and age structure before and after that winter, however, biologists know the population is on the rebound.

"Right now, there are a lot of whitetails out here," says Brown.

Yet during the 2004 hunting season, hunters weren't convinced, because they saw few whitetails. Due to the lack of snow, deer didn't migrate to their usual habitats.

"The perception of many hunters was there weren't any deer left," says Brown.

That also occurred in the Missouri River Breaks while longtime FWP research biologist Ken Hamlin was doing research in the 1980s. "The peripheral habitat near roads is where population fluctuations are most extreme, not in the remote core habitats," Hamlin says. "Some years there'd be a slight overall population decline, but most of that decline was along the peripheral habitat. So we'd hear from hunters that there were 'no deer,' when in fact there were lots of deer—but they were living beyond where most people would see them."

Such differences of perspective are not unique to Montana. Last year, hunters around Rangely, Colorado, challenged the validity of the state Wildlife Division's aerial samples. The state, hunters, and several other interested parties finally agreed to a conflict resolution process, which resulted in another 35 hours of aerial surveys that largely validated the Wildlife Division's original findings—at an additional cost of thousands of dollars.

Despite the fact that hunters were involved in the design, analysis, and interpretation of the survey, many still refused to accept the department's estimates.

Public comment on population estimates vary widely. "It's interesting to me how things have changed over the years," says Hamlin. "When I first started working, we mainly heard from hunters who were accusing us of over-counting the animals," he says. "The concern was that we were allowing for too much harvest. But nowadays, it's almost just the opposite. We're hearing more from landowners, and they're saying we're not counting all the animals out there and that we should be harvesting more."

According to Hamlin, FWP has conducted many "show-me" flights, in which hunters take part in aerial surveys. "In almost every case," he says, "they saw what we saw and counted what we counted."

Hamlin says he and other biologists understand why the public's view of populations frequently differs from their own.

"In the Gravellys, for example, portions of some elk herds spend part of the year in Idaho and Yellowstone Park," Hamlin says. "When we're flying traditional winter ranges during a mild winter, we sometimes get low counts because portions of the elk populations are not even on the flight area—which we determine based on locations of radio-collared elk—and it's impossible and too expensive to fly down into Idaho and try to count them. But all that is mathematically adjusted based on our knowledge of elk distribution from year to year."

Other factors affect surveys. Too little snow makes animals hard to see. Wet and windy weather obscures wildlife from aerial spotters. Above-average rainfall disperses game animals widely across their range.

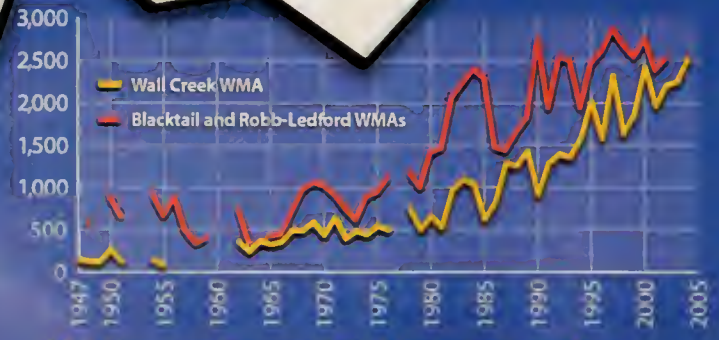
"It's not as easy to count animals as people think," Brown says.

Lines and dots

Researchers plot most FWP survey data on detailed maps. At his Bozeman office, Hamlin pulls up last January's aerial survey results on his computer monitor. Red lines trace his elk survey route up and down various drainages. The route is superimposed over blue and black lines indicating the previous years' survey routes. Red dots show where he spotted elk this past year.

"See here?" he says, tapping the screen with his finger. "We pushed up this drainage a little farther this year because we were still seeing elk tracks in the snow." A red dot higher in the drainage shows that the

Freelance writer Dave Carty, of Bozeman, is a frequent contributor to Montana Outdoors.



DECADES OF DATA

FWP biologists now have data on some populations going back a half-century or more. For example, this graph of elk counted in three Gravelly Range wildlife management areas shows how the population began to grow after state acquisition (1960: Wall Creek, 1972: Blacktail, 1988: Robb-Ledford). Numbers really took off beginning in the late 1970s, primarily due to tighter harvest restrictions. In recent years FWP has tried, with mixed results, to increase harvest in the area to level off the populations.

biologists found elk there.

When all the results are in, Hamlin analyzes the make-up of the herd, particularly cow:calf and bull:cow ratios. After comparing that to information from other surveys, he analyzes the ratios and numbers to determine the direction of each population.

Geese by the thousands

For at least one game species in the state, population estimates are rarely disputed. Jim Hansen is the department's migratory bird coordinator for the Central Flyway, and it's his job to keep tabs on the burgeoning Canada goose population along the Hi-Line.

Counting waterfowl is tricky—not because they're hard to spot, but because there are so many.

"When we leave from the airport, we're flying at maybe 800 to 900 feet above the ground," Hansen says. "It's low enough then that I can count the geese. But if there's a couple thousand geese in a field…well, then I'll have to take the eraser of my pencil and block them off on the window of the plane: groups of 30, 40, 60, 80, 100—until I know what a group of 100 geese looks like. When we get up to 2,500 or 3,000 geese in a group, it gets even harder, but overall I think we're pretty accurate." Goose hunters won't be surprised to hear that Hansen says eastern Montana's Canada goose population is expanding.

Ducks are another story. "There's some skepticism among hunters about the numbers for the breeding duck population," Hansen says. "We hear from hunters that they didn't see a lot of ducks this year, that our surveys must be wrong, that we fudged the numbers—that sort of thing.

"Unlike geese, ducks are not that apparent. They go to lots of different places. If hunters are in one area, and they don't see ducks over their decoys, they assume there aren't many ducks. But it doesn't mean the birds aren't somewhere else."

Wildlife surveys have always engendered a certain level of controversy. If the biologists who conduct them aren't inured to criticism, they have at least learned to accept it. The addition in 2004 of population data published on FWP's website may help. This will allow the public to monitor the rise or fall of populations themselves. But no one ever expects the controversies to die out completely.

"You hear all kinds of things," Hansen says. "And it seems we always hear from the hunters who aren't doing well." He pauses, perhaps reflecting on his own days in a duck blind. "But of course, the hunters who are doing well aren't talking."

Check out FWP's current population estimates on-line at fwp.mt.gov. Under "Hunting," go to "Plan a Hunt," and then click on the hunting district and species you're interested in.

"Get anything?"

Sometimes the most accurate way to monitor wild animals is to count and examine the dead ones. That's why FWP relies heavily on hunter check stations and telephone harvest surveys.

In northwestern Montana, for example, thick forest cover prevents wildlife biologists from counting white-tailed deer from the air. So instead they count harvested bucks.

"An estimate of buck numbers harvested each year largely reflects numbers of deer in the population," says research biologist Dave Pac. If the buck harvest was up 10 percent, says Pac, it's likely the pre-hunt population was up about 10 percent, too.

"Of course, all this is retrospective," he adds. "It estimates the level of the previous fall's population, but it doesn't take into account the most recent winter."

Pac adds that biologists, over a series of years, can also reconstruct deer populations by aging teeth from deer brought in by hunters at check stations. "We mainly use this information in research projects to validate estimates we arrive at by other methods."

Predator skulls also provide important information. With few other ways to gather data on black bear and mountain lion age, sex, and populations, FWP requires bear and lion hunters to provide skulls of their kill.

Another hunter survey is the federal Harvest Information Program. The survey is conducted when migratory bird hunters buy their waterfowl license.

Candy Hinz coordinates FWP's annual telephone surveys. She says the roughly 80,000 hunters called each winter as part of the survey don't seem to mind taking a few minutes to provide FWP with harvest information.

"Hunters like to talk about their hunting activity," she says. "They understand this information is essential for the department to effectively manage Montana's wildlife, and they are happy to help out."

JEFF HENRY

CHECKUP
Biologists age teeth at check stations

FWP surveys and population monitoring

Wildlife biologists will tell you that surveying wildlife and monitoring populations are the most important things they do to manage Montana's wildlife. Lacking that information, says one biologist, "would be like trying to fly an airplane blindfolded." What follows are the major wildlife surveys FWP conducts each year:

Big Game

- White-tailed deer*
- Mule deer*
- Pronghorn
- Elk*
- Bighorn sheep*
- Mountain goats
- Moose*
- Mountain lions
- Black bears

Protected Species

- Grizzly bears
- Wolves

Furbearers

- Winter track surveys
- Coyotes
- Yellowstone R. beavers

Game Birds

- Sharp-tailed grouse
- Sage grouse
- Ruffed grouse
- Blue grouse
- Wild turkeys
- Pheasants

Migratory Game Birds

- Midwinter waterfowl surveys
- Spring breeding surveys
- Sandhill cranes
- Mourning doves

Nongame Birds

- Bald eagles
- Other raptors
- Breeding birds
- Loons
- Least terns
- Piping plovers
- Colonial nesting birds
- Waterbirds and wading birds

Other

- Rabbits
- Prairie dogs
- Other small mammals
- Bats
- Swift foxes
- Amphibians and reptiles

* Denotes species surveyed twice each year

Does are from Venus ♀ BUCKS ARE F

When it comes to herd dy male mule deer are on to

GARYKRAMER.NET

"Girls kick ass" proclaimed the bumper sticker that was proudly displayed on a female college student's car. The young woman who got out of the driver's seat embodied the notion behind the sticker that women are confident, powerful, and tough.

Montana FWP research biologists have discovered the same is often true in mule deer society. In fact, that bumper sticker could be the unofficial motto for mule deer research conducted over the past decade by Ken Hamlin and Dick Mackie, who studied mule deer population dynamics in the Missouri Breaks, and by Dave Pac and Henry Jorgensen, who (along with Mackie) studied muley population dynamics in the Bridger Mountains.

Their studies show that mule deer live in a matriarchal society where females are the prime movers and shakers. Mature does grab the best habitats and kick out their sons at an early age. Meanwhile, these powerful matriarchs show the daughters, who inherit the family land, the secrets of survival and how to carry on the family line. It's something of a wildlife soap opera.

Strong Mothers

In any given mule deer population, the oldest females (called matriarchs) take over core blocks of prime habitat they willingly share with their daughters for most of the year. Within this home range, the matriarch establishes her own private birthing territory. Just before she gives birth, in late May or early June, the matriarch temporarily drives off her yearling daughter and any other cling-on daughters from previous years, so she can deliver and rear her newborn fawn in solitude.

The matriarch continues to give the brush-off to her yearling daughter for most of the summer. The young doe survives, however, because her mother had schooled her during the previous summer on how to find nutritious food, hiding cover, and shelter from harsh weather. The yearling daughter usually decides it's convenient to establish a home range that generally overlaps that of her mother's. It's kind of like living across the street from Mom.

If for some reason the yearling daughter tries to set up housekeeping in a totally dif-

♂ ROM MARS

amics, female and ally different planets

BY SAM CURTIS

JEFFREY RICH

ferent area, she usually wanders into the birthing territory of other matriarchs in the population and subsequently is shooed off by them. That forces her to return to familiar turf and her mother's apron strings.

It's not because she's mean that a mature doe chases away her subadult offspring during and immediately following the birth of her fawn. It's how she reduces the risk of attracting the attention of bears, coyotes, and wolves at a time when newborn fawns are most vulnerable to predation. In late spring, does keep a low profile. If people see adult does, it's usually just with fawns and not in groups. The only does that gather in early summer are yearlings.

A Girl Thing

After summer, the matriarch allows her yearling daughter, and any older daughters that may also have fawns, to rejoin her and her newborn. They form a rather formidable group of females.

Sometimes, these matrilineal groups comprise three or more generations. The close family ties among females seem to diminish with age, as older daughters establish their own matriarchal areas. However, daughters have been known to rejoin their mothers in family groups for more than eight years.

"It's a pretty tight, long-lasting relationship among related females, and that surprised me a little," says Hamlin of his research.

The existence of matriarchal groups puts heavy demands on available food and cover in core areas. Still, the matriarchal society takes care of its own by passing on this prime real estate to related family members, instead of allowing genetically unrelated muleys to take over.

Another value of these long-lasting female groups is that older does retain a territorial memory. Eastern Montana mule deer don't migrate to critical winter range each year but only during the occasional severe winter. When a bad winter hits, an older doe—followed by the younger ones of the group—heads to critical range she remembers from years earlier when she followed her mother or other matriarch there.

TIM CHRISTIE

CAROL POLICH

DEA VOGEL

MOTHER KNOWS BEST When it's time to give birth, the matriarch chases away her year-old offspring so it doesn't attract predators to the vulnerable newborn fawn (left). Later in the summer, she welcomes back her older daughter (center) and related does and forms a matriarchal group. Young bucks (bottom), however, leave the family and begin wandering in search of their own home ranges.

Teenage Sons

I can imagine readers wondering: "What about the mule deer bucks?" Well, bucks are from Mars, remember.

While the yearling females stay with their mother during early spring, yearling males are saying, "I'm outta here." By midsummer, most young bucks have left their mother and sisters to look for a place to establish their own home ranges, separate and sometimes far removed from that of their mother.

"The yearling males are no longer with their mothers, but they still need somebody to hang with," says Hamlin. "So they wander until they find an unrelated yearling buck or doe, an older, unproductive doe, or even a mature buck."

Pac calls these yearling males "social drifters." They're like some guys you might have known in high school.

One biological benefit of a buck rarely coming into contact with his mother or sisters is that he's more likely to disperse his genes elsewhere, thus increasing genetic diversity among the overall deer herd.

Finding winter range can be crucial to a young buck's survival. Since he undergoes a social shuffle during his first few years, he may learn from many deer. If his mother migrates to winter range during the buck's first winter, he learns its location from her. The buck may learn of another winter range during his second winter from a group of females he's hanging with. And then, in his third year, he could find yet another winter range by following an adult buck group that he joins after the rut.

"The younger mule deer bucks move around a lot from year to year," says Hamlin. "So just because you see a buck in an area one year doesn't necessarily mean he'll be there the next year."

After a young buck's first few years of shifting social allegiances, he joins other mature bucks in what biologists call a bachelor group. But it's more like a bachelor party. The bucks are off by themselves eating and taking it easy, while the does are nursing and home-schooling their fawns.

The only time adult males strike off alone is during the rut, a time when bucks strut around showing off their antlers and getting into fights over females.

Social Revelations

What FWP research scientists learn about mule deer population dynamics can help mule deer hunters zero in on prime buck habitats. But to do so requires an understanding of why does are where they are and bucks are where they are.

The grouping of does around a matriarch concentrates females in the choicest habitat pockets. The density of deer in these areas stays stable whether the general deer population is rising or falling. It's the adjacent areas of lesser quality habitat where biologists see deer numbers fluctuate. When populations decline, these marginal areas may contain no deer. But when populations increase, areas surrounding core habitats can fill with young does temporarily chased from the matriarch's home range.

> YEARLING MALES ARE "SOCIAL DRIFTERS." THEY'RE LIKE SOME GUYS YOU MIGHT HAVE KNOWN IN HIGH SCHOOL.

These concentrations of deer can mislead hunters, who figure where there are many does, there are likely to be bucks. But that's rarely true, because bucks usually stay away from does except during rut.

In their report, Hamlin and Mackie found that "not only did different sex and age classes most often occur in different

Sam Curtis, who lives near Bozeman, is a frequent contributor to Montana Outdoors *and the author of* The Complete Guide to Mule Deer Hunting.

social groups, but they also tended to occupy different land areas during most of the year." They concluded, "It may be valid to treat mature females and their fawns, nonproductive females, yearling males, and mature males as four separate populations."

Of course, of most interest to hunters is the idea that mature bucks comprise a totally different population than does and that they live in different land areas. That might help a few hunters understand why they have been unsuccessful in the past.

But let's not get too carried away. Bucks may not live with does for most of the year, but they don't move to Paris, either. While does congregate in clusters on core habitat areas, a buck makes his home range relatively nearby, on widely separated patches of habitat spread out among areas used by does.

Mule deer hunters might consider these peripheral areas next to doe concentrations when searching for bucks before the rut. For example, in Montana's mountain-foothill habitats, most bucks hang out in the higher and lower edges of the mule deer's range, while the does, fawns, and yearlings inhabit the middle section.

"Does live in the middle belt of forest because there they obtain the best blend of quality resources such as food and cover," explains Pac. "To attain high security in timbered habitats, the female probably has to sacrifice forage quantity to a degree, because under a forest canopy not as much forage grows as it does in an alpine meadow or in foothill grassland. But under a forest canopy the quality of forage stays green the longest of any habitat. So, does are able to stay on a fairly high nutritional plane for a longer period of time than they would if they lived above or below that belt.

On the other hand, bucks have evolved to use forest habitat differently. "In my opinion," says Pac, "a buck's habits and distribution have been selected over time to put him in those peripheral habitats where he's going to be able to eat greater quantities of lower quality forage."

Another benefit of a buck's wide home range is that it provides easy access to the home ranges of numerous females during the rut, without the buck having to compete with fawn-rearing does for forage and cover during the rest of the year.

Just as there are differences between men and women, wildlife researchers have learned that mule deer bucks and does have different behaviors. Using methods and tools unavailable to hunters or wildlife watchers, research scientists have learned of a deer world filled with power struggles, social hierarchies, and complex habitat use. Knowing that does rule and that bucks are on a different planet will help wildlife biologists do a better job of managing muleys. And it will help hunters better understand this ever-intriguing quarry.

WAITING IN THE WINGS FWP researchers found that a mule deer buck has a wide home range that gives him access to numerous does during the rut.

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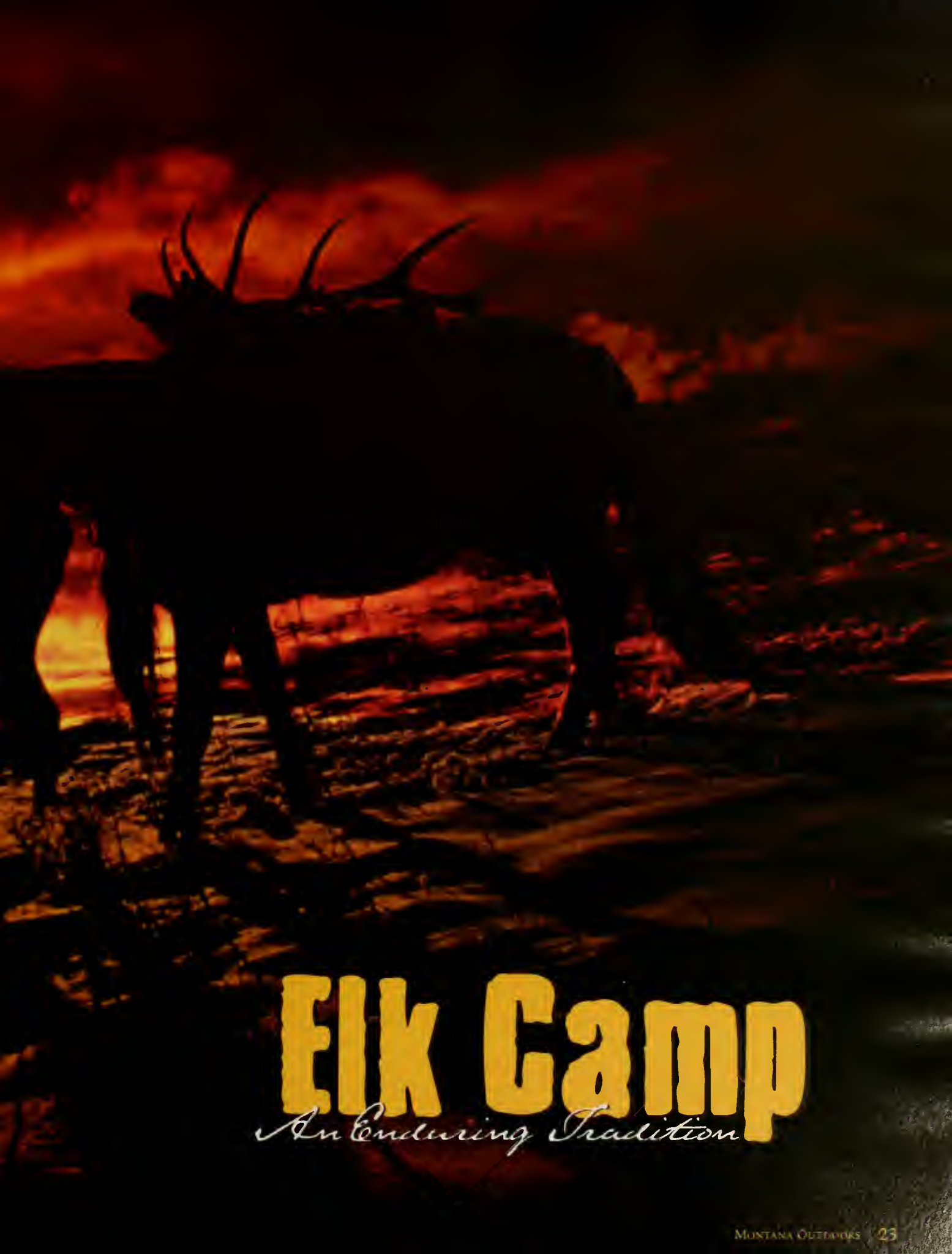
ELK HUNTER AT SUNSET BY DENVER BRYAN



Elk Camp

An Enduring Tradition

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This world of leather, canvas, stout rope, and cast iron has nothing to do with what you left behind down there. Except that, for a week or so, you consider it home…

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…The practical value of elk camp, of course, is that you wake up each morning in the heart of elk country. Camp is set up, and maybe there's even someone hired to do the cooking. That leaves 24 hours a day for either sleeping or hunting…

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...But you came here for more than that, surely. There's poker, and jokes, and telling stories at day's end ("You'll never believe what happened...") Later, while drifting off to sleep, your senses recall the saddle's creak, the steam coming off sweaty horse flanks, the chatter of chickadees flitting about camp, the sparkling frost on moonlit tent walls...

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...The next morning you dress quickly, bid the others good luck, then steal away into the predawn dark, to hunt all day until your legs can hardly hold you up. Successful or not, you stagger back that evening, drawn by blue smoke rising against dark conifers, warmed by faint sounds of laughter, the clink of cooking pots, the tear of wood being split for one last campfire, for one last story. "You'll never believe what happened..."

—TOM DICKSON

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MAKING SENSE OF MOUNTAIN WHITETAILS

A newly released report sheds light on the many factors driving northwestern white-tailed deer populations.

In this case, it turns out that northwestern Montana deer hunters were right all along.

For years, these whitetail hunters resisted attempts by wildlife managers to liberalize doe hunting opportunities. In 1999, fearing that northwestern deer populations had been severely damaged by a brutal winter a few years earlier, hunters went so far as to demand a closure to the region's doe harvest.

"No doubt about it. Hunters up here are very conservative when it comes to deer regulations," says Dr. Alan Wood, a white-tailed deer expert in Kalispell who works as the Montana Fish, Wildlife & Parks wildlife mitigation coordinator.

Results from a monumental FWP study on white-tailed deer in the state's northwestern region indicate hunters had it right. "The study suggests regulations designed to encourage doe harvest might go too far and reduce population size in years when adult doe survival is notably impacted by other types of mortality," says Gary Dusek, another FWP whitetail expert. Wood and lead author Dusek wrote the study report, "Population Ecology of White-tailed Deer in Northwestern Montana."

TAKE ANOTHER LOOK? Hunters were right to be wary of liberal doe harvest regulations following the brutal winter of 1996–97. But now that deer numbers have rebounded, say FWP biologists, doe harvest can increase with no harm to the population.

BY TOM DICKSON

On the other hand, says Dusek, the study also showed that hunting districts with strong deer populations can withstand a higher level of doe harvest than many hunters ever thought possible. In one study area, FWP issued record numbers of antlerless deer permits, yet hunters were unable to kill enough does to lower the deer population. That's good news for hunters who like to take an extra doe each fall to fill the freezer, says regional wildlife manager Jim Williams.

"We now have much greater confidence in increasing doe harvest in some districts without reducing the deer population," he says.

FWP conducted the deer ecology study from 1988 to 2000 in two hunting districts (101 and 102) between Kalispell and Eureka. Located in the Salish Mountains, the area has one of the highest densities of whitetails in the region. It attracts deer hunters from Kalispell, Whitefish, Columbia Falls, and nearby towns. The study was designed to gather much-needed information about whitetails and their interactions with habitat and predators. It also aimed to find ways wildlife managers could reliably estimate whitetail populations each year.

Over the past decade, wildlife biologists have been using much of the research data in their management plans. Only recently, however, were researchers able to complete their analysis of the information and write the final report.

"This report was a long time coming," says Williams. "But now that we've got it, we're putting it to use to improve our management of white-tailed deer across the northwestern region."

Tom Dickson is editor of Montana Outdoors.

SLIMMER MARGIN

Like elk in southwestern Montana and mule deer and antelope in the state's eastern half, whitetails are the most abundant and accessible big game species in the northwest. Williams calls them "the bread-and-butter animal up here."

Managing northwestern whitetails requires thinking about deer differently than elsewhere in the state. The study found that one of the main differences in northwestern deer is more adult deer die in winter and fewer fawns are born each spring than in eastern Montana.

"That gives us a much slimmer margin of deer to work with when it comes to providing opportunities for additional doe harvest," says Wood.

Wood says the study showed that the northwest averages roughly 50 fawns added to the population each year per 100 adults, while loss of adults due to predation and other factors is around 30 per year.

"That only leaves 20 deer per 100 adults available for hunters to harvest without reducing the size of the population," he says.

Compare that with eastern Montana mule deer, where 60 fawns per 100 adults may be added each spring, and adult mortality (other than hunting) can be less than 10 per year. "That leaves 50 deer available for hunters," says Wood. "And that's why FWP can allow higher antlerless harvest in the eastern half of the state."

Nevertheless, the northwest still has plenty of whitetails. Deer densities in the study areas

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DENSE BUT VULNERABLE Northwestern deer densities can be as many as 25 per square mile. Yet due to fawn loss, fewer deer are available for hunters than elsewhere in Montana. Below: At hunter check stations, FWP staff gather essential population data.

JEFF HENRY

were roughly 15 to 25 deer per square mile.

"We never suspected it was that high," says Wood. "So if you're out hunting and don't see any deer, you should know the deer are out there and probably outsmarting you. They just aren't as easy to see as they are in eastern Montana."

COUNTING WHITETAILS

The key to deer management is knowing roughly how many deer are in a population, whether the population is going up or down from year to year, and what factors account for deer mortality.

"If you don't know how many are born, how many are dying, and how hunting contributes to overall mortality, it's difficult to know how many deer to allow hunters to harvest," says Wood.

Biologists in much of Montana monitor mule deer numbers from airplanes and helicopters. That doesn't work for whitetails in the densely forested northwestern region. To gather information about whitetails for their study, researchers captured, radio-collared, and tracked 390 individual deer. The researchers followed deer movement to learn how deer distributed themselves throughout the year and which habitats they used. When a collar was motionless for more than four hours, it pulsated at a different rate, indicating that the deer may have died and alerting biologists to examine the site and learn what killed the deer.

Equally important to the project was adding four additional hunter check stations to the study area's two. At the six stations, FWP biologists and technicians determined harvest rates as well as the sex and age (by examining teeth) of harvested deer. With this information, biologists later re-created the population as it existed before the hunting season and looked at harvest trends during the study period.

One of the most important contributions of the study, says Dusek, is that it confirmed the importance of check stations.

"What we learn from hunters there is invaluable to our ability to monitor whitetail populations," he says.

As part of the study, biologists altered the harvest regulations in two different but adjacent hunting districts (101 and 102) over a five-year period. In one district, FWP steadily increased the number of permits for antlerless deer to see at what point a measurable change in doe harvest would be sufficient to affect the deer population.

"There weren't nearly enough hunters wanting to kill a second deer for us to reach a point where doe harvest alone might impact the population," says Dusek.

In other words, when a white-tailed deer population is healthy and increasing, FWP can provide extensive doe hunting opportunities without concern that hunters may depress overall deer numbers.

But that's only true in certain cases. "I think if you'd try to allow high antlerless harvests where deer numbers are declining due to predation or a combination of other factors, you could really cut into the population," Dusek says.

Adds Williams, "One of the great values of this study is that we can now customize our antlerless deer permit recommendations to each hunting district, depending on the status of each individual deer population based on harvest information and spring recruitment surveys."

For instance, in 2005 FWP is offering 200 B licenses (permits that allow hunters to take an additional whitetail doe) for hunting districts 101 and 102.

"We can do that because we know the population is growing and we have confidence from what we saw in the study that the populations in those districts won't decline from the additional antlerless harvest," says Williams.

NO SURPRISE: LIONS EAT DEER

Another key finding of the study: Other than hunting, mountain lions were usually the lead cause of adult doe mortality—ahead of bears, wolves, auto collisions, snowfall, and cold temperatures. (The exception was during the brutal winter of 1996–97.) Lion numbers have increased in northwestern Montana since 1971, when the cat became a protected game animal that could be killed only during regulated seasons.

Hunters don't need to panic that lions will wipe out the deer population, say FWP biologists. But wildlife managers will have to consider lion predation and abundance when deciding how many antlerless deer permits to issue each year.

"Lions are a natural and effective predator of deer," says Dusek. "Their numbers

CRUNCHY SNOW? LET'S HUNT!

The northwestern Montana deer study revealed information that may cause hunters to reconsider their fall plans.

For example, an evaluation of days when hunters killed deer revealed no "ideal" or "poor" hunting conditions.

"Factors that hunters talk about—like whether the snow is too crunchy or the ground is too dry, causing twigs to snap as you walk, or it's too windy, or too still—the data showed that none of that matters much," says study co-author Alan Wood.

What the study did show is that the number of deer shot each week is mainly determined by the number of deer and hunters in the woods.

"If hunters go out with confidence, they're likely to do as well one day as they would the next, no matter what the hunting conditions are," says Gary Dusek, lead author of the study.

Though environmental conditions don't appear to affect hunting success much, the time of year can. The study showed that the highest harvest rates came during the last week of the five-week either-sex deer season. Dusek thinks that's mainly due to bucks being more active during that last week, the height of the rut. "The rut peaks about November 21 or 22, when bucks are on the move around the clock," he says.

Dusek doesn't recommend that hunters change their traditional hunting dates based on the findings. "But I guess if all you are concerned with is efficiency," he says, "then that last week would probably be the best time to hunt a buck."

rise as deer numbers rise, but then drop after deer numbers drop. So I don't think anyone has to be concerned about northwestern Montana ever running out of deer because of lions or other predators."

In fact, adds Dusek, whitetail numbers across the northwest have rebounded nicely from the 1996–97 winter, even with current lion populations.

WINTER HABITAT

In addition to examining deer population dynamics, researchers also studied critical winter habitats of whitetails. Wildlife managers say the information is essential because forest managers regularly ask FWP to provide input about maintaining deer habitat on proposed timber projects.

In the past, FWP had only limited information to provide. Wildlife biologists knew conifer stands were essential for keeping snow from getting too deep on the ground and for creating thermal protection (acting like giant sleeping bags for groups of deer huddled within the groves). But they didn't know what percentage of the low-elevation winter cover needed to be conserved.

Soon they will. Though the final percentages are still being tweaked, Wood says FWP has already provided deer winter habitat information to the U.S. Forest Service.

"The Forest Service was planning a lot of forest thinning to reduce fire risks near rural homes," says Wood. "After they learned that we found up to 500 deer wintering on each square mile of key winter range, they redesigned thinning plans to address habitat needs of wintering deer."

The study also analyzed how 60 years of logging affected deer habitat. The findings, along with those of other studies in northwestern Montana and northern Idaho, challenged accepted wisdom. For years, people have believed that traditional timber harvests help deer survive winter by opening up forest canopies so sunlight can stimulate growth of chokecherries, serviceberries, and other browse deer like to eat.

However, by examining stomach contents of deer, FWP researchers found that in winter the animals were eating primarily Douglas fir, Oregon grapes, and lichens—food found in conifer stands. The deer weren't eating many shrubs, explains Dusek, because those plants grew where the snow got too deep.

CONIFER COMFORT The study showed that deep-snow winters don't hammer deer populations if whitetails have adequate stands of critical conifer cover.

"We found that in winter, deer eat what's available to them in the shallower snow cover," he says.

Another common belief is that northwestern deer numbers always plummet in severe winters. Yet the study showed annual snowfall barely affects adult doe survival.

Does that mean winter habitat isn't important to deer? Just the opposite, says Dusek. It's only when deer have critical conifer stands that they can escape deep snow and cold temperatures, which deplete body fat and weaken the animals.

What's more, critical winter habitat can improve recruitment (the number of new deer added to the population each year). The study showed that in winter, fawns start dying when temperatures regularly fall below 10 degrees. Quality winter range can help reduce that mortality.

Amazingly, the critical habitats that protect deer from harsh northern winters make up just a tiny part of the landscape.

"In one hunting district, 32 percent of the deer wintered on just 2 percent of the available habitat," says Dusek. "That's really cramming deer into a small area. You could draw the conclusion that maintaining the integrity of these winter ranges is critical to maintaining dense deer populations across the landscape," he says.

That's by no means the only conclusion Montana deer managers are drawing from the 12-year deer ecology study. They also now know predation (mainly from mountain lions, but also by other predators) must be factored into harvest recommendations. And that whitetail doe harvest can be fine-tuned from one hunting district to the next to account for population variations.

But what matters most to conserving northwestern whitetails and maintaining hunting opportunities over the long haul may be knowing which critical habitats deer use in winter—and how little of that exists on the landscape.

Facial Hairitage

By Diane Tipton

One of every four adult Montanans hunts, and during hunting season it seems like most grow a beard. If you're not one of them—or even if you are—you may wonder what accounts for this seasonal sprouting of facial hair.

Though many women hunt (Montana has the highest per capita hunting participation rate of women in the United States), the hunting beard is a purely male phenomenon. For those of us who either can't or don't grow beards, it's an odd ritual to witness, one that sort of sneaks up on us.

As we're raking leaves or attending football games, we barely notice the facial hair slowly emerging from the faces of male friends and neighbors. Then one day you run into a fellow you haven't seen for a few months, and you barely recognize him.

Because the hunting beard is such a little-recognized tradition, I thought I'd ask some of the many hunters at Montana Fish, Wildlife & Parks why they retire their razor each fall. Some told me they grow a beard this time of year to help them blend into the natural surroundings.

"As a big-game bowhunter and a waterfowl hunter, I figure the less shiny white face I show, the better I can elude sharp-eyed critters at close range," says Bruce Rich, FWP fisheries manager in Bozeman. "Whether this has any practical reality is immaterial. If I feel less visible, I feel more confident."

Unfortunately, the beard's role as camouflage can backfire.

"My camouflage beard gradually turned snow white until it became more like the tail on a whitetail deer as it bounds away," says Jim Vashro, fisheries manager in Kalispell. "I did a little searching, but I couldn't find Grecian Formula For Men in olive drab, so I gave up on the whole idea about ten years ago."

David Schmetterling, fisheries biologist in Missoula, says he grows his hunting beard mainly for warmth. By the time winter arrives, he's got a thick furry muffler to keep him warm while ice fishing.

Jim Williams, wildlife manager in Kalispell and an avid trapper, calls his facial growth his "marten-trapping beard." Unfortunately, says Williams, he's got blond hair, which means it takes a while to grow a visible beard: "By the time it's looking halfway decent, I'm about ready to shave it off."

Some hunters shave theirs well before they're ready. Wives and kids have a thing or two to do with that (or even whether a hunter grows one at all) Some mild-mannered guys grow "experimental" beards only to drop the idea in subsequent years to keep the peace.

Montana Outdoors editor Tom Dickson says if he can get past the initial growth of sharp stubble, his hunting beard softens enough that his wife doesn't mind a furry kiss.

"But if I try to get close during those first few weeks, she runs away screaming," he says.

Joe Weigand, landowner/wildlife resource specialist in Helena, is in a whole different category. He says his beard actually lives on at his wife's urging. Weigand says he first started growing his beard in 1991, the year his brother drew a mountain goat tag.

"When he succeeded, I decided I wasn't going to shave until I got a goat," he says. "I got my goat in 1997, but my wife liked the beard so much by then that she demanded I keep it. I've shaved once or twice, but the beard always comes back. My wife rules."

Another trait of the beard is that it can become a badge of honor that distinguishes the wise and noble elder hunters from the youthful beginners.

"When my hunting partners and I stand around the campfire, you can easily tell the seasoned hunters from the younger ones by the patches of white in their beards," says Greg Hahn, spouse of an FWP employee in Helena. The well-seasoned Hahn has grown a hunting beard each fall for 25 years.

Thomas Baumeister, chief of FWP's Educarion Bureau, sees growing a hunting beard as a way of celebrating Montana's rich hunting heritage.

"It's much more than growing facial hair," he says. "It's stepping into the character of the untamed, self-reliant woodsman or hunter of days gone by. A beard is symbolic of our heritage."

For Montanans, that hunting heritage is a part of our lives, even if we don't hunt. The sight of a hunting beard is a reminder, like the southern migration of ducks and the bugling of elk, that the state's hunting seasons are well under way and winrer is just around the corner.

ILLUSTRATION BY PETER GROSSHAUSER

Diane Tipton is an information officer for FWP in Helena.

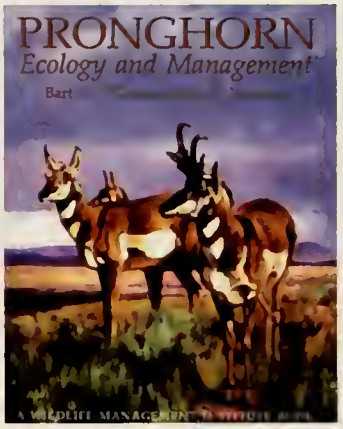
By Tom Dickson

The Grail Bird: Hot on the Trail of the Ivory-Billed Woodpecker. *Tim Gallagher. Houghton Mifflin Company, 272 pages, $25.*

Even those who don't care about birds would have to be emotionally numb not to feel chills reading this account of birders rediscovering the ivory-billed woodpecker in Arkansas's Cache River National Wildlife Refuge. Gallagher, editor of *Living Bird* at the Cornell Laboratory of Ornithology, and his friend Alabaman Bobby Harrison spent several years tracking down rumors that people had seen ivory-billed woodpeckers. Last documented in 1944, the species was considered extinct, mainly due to habitat destruction. The pair followed up on a lead and headed into the bayou in canoes in February 2004. There, in the snake-infested backwaters, they saw a large black-and-white bird fly out from the shadows in front of them. Writes Gallagher: "'Look at all the white on its wings!' I yelled. Hearing my voice, it veered away from the tree and continued to fly to the left. We both cried out simultaneously, 'Ivory-bill.'" Harrison then wept, so overcome was he by the historic moment. On reading this book, you might, too.

Pronghorn: Ecology and Management. *Bart W. O'Gara, Jim D. Yoakum. Wildlife Management Institute, University Press of Colorado, 904 pages, $85.*

In its previous volume, *Prairie Ghost*, the Wildlife Management Institute presented pronghorn fans with the definitive book on human interactions with this speedy, large-eyed ungulate of the North American Great Plains. In the institute's companion volume, 30 years in the making, readers learn about the distribution, physiology, nutrition, diseases, and hunting of what people have mistakenly called "antelope" for centuries. The massive book also explains what state and federal agencies have learned as they try to manage a prairie animal on a landscape now largely devoid of prairie. (Co-author Bart W. O'Gara, also co-author of *Prairie Ghost*, was for years head of the University of Montana's Montana Cooperative Wildlife Research Unit.)



Collapse: How Societies Choose to Fail or Succeed. *Jared Diamond. Viking, 592 pages, $29.95.*

Montana's thriving Ravalli County, which encompasses the Bitterroot Valley, is by no means a failure. Yet UCLA geology professor Jared Diamond chooses to feature the scenic valley, which grew by 44 percent during the 1990s, to kick off his new book on the decisions societies make that can lead to their demise. In his previous book, the Pulitzer Prize–winning *Guns, Germs, and Steel*, Diamond wrote that environmental factors such as latitude and rainfall account largely for the success of societies. Here he zeroes in on the often-unwise choices made by societies over the past 3,000 years that have led to their collapse. The focus on western Montana is personal:

Diamond owns a summer home there. He writes that the area's historic industries of timber and apple harvest have all but disappeared, leaving only ranching, which survives due to federal subsidies. That, and money from nonresidents, are primarily what fuel the valley economy, Diamond writes. Ultimately, the author claims, a society's *response* to its environmental problems determines whether it will fail or succeed. The Bitterroot Valley, like so many places in Montana, is faced with hard decisions in response to social and environmental problems such as overcrowding, traffic, loss of open space and wildlife habitat, and an aging local population. How effectively the people in Ravalli and other counties can manage those issues will largely determine whether Montana can continue to support thriving human communities and wildlife populations. The alternative, as Diamond shows in grim examples from the past few millennia, is not a pleasant one to consider.

Seeing Yellowstone in 1871: Earliest Descriptions and Images from the Field. *Marlene Deahl Merrill (ed.). University of Nebraska Press, 88 pages, $19.95.*

In 1871, the young scientist Albert Peale accompanied the Hayden Expedition to map and explore the area that a year later was designated as Yellowstone National Park. During the expedition, Peale wrote a series of letters to the *Philadelphia Press* that contain the first impressions of Yellowstone sent back from the field. In this collection of Peale's letters, edited by historian and scholar Marlene Deahl Merrill, readers rediscover the world's first national park as it looked more than a century ago. Peale's letters convey the grandeur of Yellowstone with clarity and immediacy, even as they offer apt, detailed descriptions of the basin's geologic forms—geysers, creeks, craters, and springs. The book is illustrated with lovely watercolor field sketches by Thomas Moran, photographs by William Henry Jackson, and little-known drawings by the Hayden Expedition's official artist, Henry Wood Elliott.

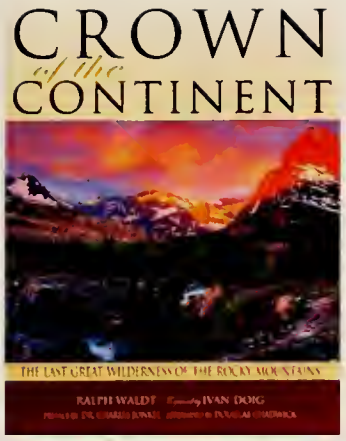
The Lewis & Clark Trail: American Landscapes. *Richard Mack. Quiet Light Publishing, 243 pages, $90.*

This may be the most beautiful of the many Lewis and Clark coffee table books published over the past few years. For two years, Illinois commercial photographer Richard Mack drove up and down the route followed by the Corps of Discovery. His goal, he writes, was to capture "the trail during the proper seasons in order to portray what the Corps of Discovery likely saw and experienced, as well as to convey the challenges they faced over 200 years ago. My expe-

dition would take me to the same locations they had traveled to and within a few weeks of when they had passed by." The result is a luscious book of 248 color photographs from St. Louis to Fort Clatsop on the Pacific Coast. If you've ever wondered what it must have been like to be with Lewis and Clark on their monumental journey, looking at Mack's beautifully rendered images is as close as you could ever get.

The Crown of the Continent: The Last Great Wilderness of the Rocky Mountains. *Ralph Waldt. Riverbend Publishing. 168 pages, $29.95.*

This book was produced for a political purpose: "People who become aware of [the Crown of the Continent ecosystem]," writes primary author Ralph Waldt, "may also become passionate advocates for the continued and expanded preservation of this last great place." The effort will likely succeed. So beautifully is this book illustrated, so compelling are the chapters by Waldt, novelist Ivan Doig, author Douglas Chadwick, and others, that a reader can't help but worry. Proposed oil and gas development, growing rural sprawl, and a proliferation of invasive exotic plants threaten this vast region of wilderness stretching from the Blackfoot Valley north to Canada's Banff National Park. Waldt, whose prose comprises most of the book, is an accomplished writer, photographer, and naturalist who for 12 years was resident naturalist at The Nature Conservancy's Pine Butte Preserve, along the Rocky Mountain Front west of Choteau. He estimates he has walked and snowshoed more than 10,000 miles within the Crown of the Continent ecosystem. Through this visually spectacular book, Waldt returns to the



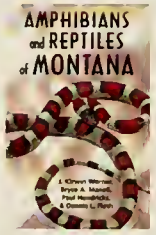
most beautiful and exciting spots of that journey, inviting readers to come along.

On Ancient Wings: The Sandhill Cranes of North America. *Michael Forsberg. Michael Forsberg Photography, 168 pages, $45.*

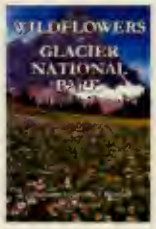
Nebraska photographer Michael Forsberg has probably spent more time behind a camera lens watching sandhill cranes than anyone in the world. His affection for these stately birds, which congregate along the central Platte River Valley by the tens of thousands each March as part of their spring migration, is evident throughout this elegant, beautifully illustrated coffee table book.

Amphibians and Reptiles of Montana. *J. Kirwin Werner, Bruce A. Maxell, Paul Hendricks, Dennis L. Flath. Mountain Press Publishing Company, 276 pages, $20.*

Montana is known largely for its large wildlife: elk, moose, bighorn sheep, and bears. But the state is also home to many smaller creatures, including 31 known species of amphibians and reptiles. This comprehensive field guide provides color photographs and descriptions that enable anyone to identify Montana's frogs, toads, salamanders, turtles, lizards, and snakes. And it includes fascinating facts about these creatures. The Western skink, for example, detaches itself from its tail when captured by predators. And the Pacific treefrog manufactures a natural antifreeze to keep it alive through the northwest region's cold winters.



Wildflowers of Glacier National Park and Surrounding Areas. *Shannon Fitzpatrick Kimball and Peter Lesica. Riverbend Publishing, 256 pages, $19.95.*



When I drove my visiting relatives to Glacier this summer, the park was aglow in wildflowers. I was able to identify a few for my guests, but having this beautifully illustrated and easy-to-use guide would have made the trip more enjoyable for all of us. Kimball (from Bigfork) and Lesica (Missoula) are both hard-core Montana botanists who know the park and its flowering plants as well as anyone.

Weather Extremes of the West. *Tye W. Parzybok. Mountain Press Publishing Company, 288 pages, $24.*

"No single cold air event [in the contiguous United States] compares to the length and harshness of the winter of 1936–37 in the northern Great Plains," writes Tye Parzybok in this can't-put-it-down book on the West's wild weather. Writes Parzybok: "The entire state of Montana suffered extreme conditions—22.4 degrees colder than normal—and recorded extremely low temperatures: -53 degrees at Summit, -57 degrees at Cascade, and -59 degrees at Frazer and Glasgow. Fifteen people died of hypothermia...." If you love reading this kind of stuff—along with killer tornadoes, bizarre desert thermals, and other extreme weather abnormalities—this book will be a delight. The West may not be as wild as it once was, but its weather sure is.

Buffalo Country: America's National Bison Range. *Photos by Donald M. Jones. Riverbend Publishing, 72 pages, $13.95.*

If you read our feature on the National Bison Range ("Homing in on the Range," May–June 2005), you know this 18,000-acre refuge north of Missoula is one of the great undiscovered wildlife viewing hotspots in Montana. Now you can see the range and its wildlife in all their colorful beauty through the eyes of *Montana Outdoors* contributor Donald M. Jones, of Troy. Jones says he's been visiting the bison range for more than 30 years and calls it "one of my favorite places in Montana. I always see something new." The colorful book includes bits of lively refuge history and other informational tidbits written by the publisher.

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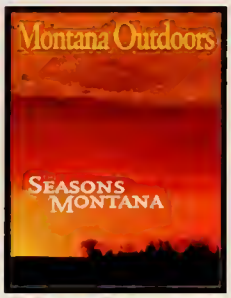

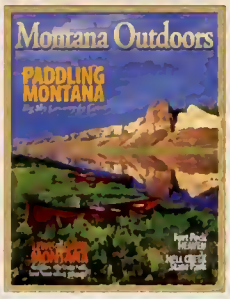

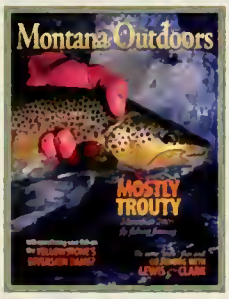

January–February 2005

24th annual photo issue. We celebrate in pictures the seasonal beauty and grandeur of Montana's landscapes, flora, fauna, and state parks.

March–April 2005

Lewis and Clark in Montana. The Corps of Discovery's amazing journey through Big Sky Country. *By Dayton Duncan. Paintings by Charles Fritz*

Doing It Themselves. At Becoming an Outdoors-Woman workshops, women learn how to enjoy the outdoors without relying on others. *By Becky Lomax*

Aiming to Make Better Hunters. Why do 1,600 Montanans volunteer thousands of hours each year to improve hunter safety and ethics? *By Sam Curtis. Photos by Adam Van Zee*

Paddling Montana. A beginner's guide to canoeing the scenic and historic rivers of Big Sky Country. *By Dave Carty*

Gateway to Fort Peck Lake. At Hell Creek State Park, visitors find a portal into one of Montana's great water recreation areas. *By Mark Henckel*

Meeting the Challenge Head On. How a nationally recognized, landowner-led conservation group is protecting both the natural resources and rural lifestyle of the Blackfoot Valley. *By Sam Curtis*

May–June 2005

Fly Fishing Forecast. Though ongoing drought has hurt some Montana trout fisheries, the outlook for 2005 on most major rivers looks good. *By Greg Thomas*

Little Dams, Big Barriers. Diversion dams on the Yellowstone River system cause the loss of countless fish each year, including one species' near-extinction. One irrigator has found a way to keep fields watered while helping fish survive. Will others follow? *By Tom Dickson*

A Different Angle on the Expedition. Did fish and fishing alter the fate of Lewis and Clark? *By Nick Gevock*

Homing in on the Range. Travelers are finally discovering the buffalo, hilly prairies, and other wonders of the National Bison Range in Moiese. *By Gary Beeler*

Animal Architecture. From insulated dens to insecticidal nests, wildlife build some amazing structures. *By Sam Curtis*

Gushing Over Giant Springs. What with the fishing, Lewis and Clark history, riverside trails, hatchery tours, picnicking, and more, it's hard to keep the great features of this state park bottled up. *By Bruce Auchly*

July–August 2005

Barbed-Wire Bears. Using fencing wire and DNA technology, this unprecedented new survey of northern Montana grizzlies could help determine whether the population is on the rebound. *By Tom Dickson*

The True Utmost Reaches of the Missouri. Were Lewis and Clark wrong when they identified the source of this great river? *By Donald F. Nell and Anthony Demetriades*

Right On Target. Hunters, peace officers, and recreational marksmen are zeroing in on Montana's growing number of shooting ranges. *By Bruce Auchly*

Rock of Ages. For hundreds of years, the ancient sandstone pillars at Medicine Rocks State Park have conjured feelings of inspiration, awe, and spiritual wonder. *By Brett French*

A Close Look at Bird Watching. How to get started in Montana's fastest-growing outdoors activity. *By Becky Lomax*

Who Gets the Water? Montana and other upstream states want more of the Missouri River held in reservoirs for angling, boating, and fish populations. Downstream states say they need the water for moving barges. So far, the barges are winning. *By Andrew McKean*

Badgers North of the Border. How Montana is helping its Canadian neighbors restore a population of this remarkable mammal. *By John Fraley and Jim Williams*

September–October 2005

The Greatest Hunting Trip Ever? Stalking Montana's amazingly abundant wildlife with Lewis and Clark. *By Ben Long. Paintings by John F. Clymer*

The Case of the Disappearing Duck. Why have pintail numbers been dropping over the past few decades while similar waterfowl species have shown remarkable recoveries? *By Dave Carty*

The "Right" Rain. The timing of precipitation may mean far more to wildlife populations (and hunters' perceptions) than total inches. *By Sam Curtis*

Duck Done Deliciously. Finally, some easy ways to cook mouth-watering waterfowl dishes. *By Tom Dickson. Photos by Bill Lindner*

Taking the Hunt to a Higher Level. Hunting is hard enough. But doing it with bow and arrow demands even more commitment, knowledge, and skill. *Photo essay*

Oasis on the Prairie. Cool and clear water, sandy beaches, picnic facilities, and more—the new Brush Lake State Park may be the greatest thing to hit northeastern Montana since the invention of air conditioning. *By Andrew McKean. Photos by Matt Long*

November–December 2005

The Treaty Lives On. Council Grove State Park commemorates "the place of tall trees with no limbs," where local Indian tribes reluctantly gave up most of their homeland 150 years ago. *By Daryl Gadbow*

Who Calls the Shots? The courts continue their struggle to find the right mix of state and federal authority that best serves the public's interest in wildlife. *By Thomas Baumeister and Tom Dickson*

Trend Spotters. When FWP biologists count wildlife, they're learning which direction populations are moving. *By Dave Carty*

Does are from Venus, Bucks are from Mars. When it comes to herd dynamics, female and male mule deer are on totally different planets. *By Sam Curtis*

Elk Camp. An enduring tradition. *Photo essay*

Making Sense of Mountain Whitetails. A newly released report sheds light on the many factors driving northwestern white-tailed deer populations. *By Tom Dickson*

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Montana Outdoors
PO Box 200701
Helena, MT 59620-0701
montanaoutdoors@mt.gov

Snowshoe Hare

Lepus americanus

The snowshoe hare is a four-legged hamburger on the menu of most every mid-sized forest predator that walks or flies. I saw this firsthand one November day in the Great Bear Wilderness while walking up a snow-dusted trail through an open stand of lodgepole pine. Rounding a bend, I was startled to see a snowshoe hare, already in white pelage, sprinting up the trail at me. It raced right past me like I wasn't even there. As it turned out, I was the hare's salvation. Down the trail from where the hare had come, I saw a large pine marten hop onto a fallen pine, foiled in its pursuit of supper.

A PREY'S LIFE The hare's prominent, snowshoelike rear feet leave one of the most recognizable and abundant tracks across Montana's forested landscape.

Often those tracks are of a fleeing hare, like the one I saw running from the marten. Adult snowshoe hares (the name comes from the Old English word for the animal, *hara*) rely on speed and agility to avoid predators—lynx, coyotes, weasels, owls, ravens, and hawks.

Juvenile hares, too slow to outrace predators, try to remain motionless to avoid detection. Still, the vast majority of young hares are eaten before they live a year. For all their speed, adults don't do much better: On average, more than half die each year. Thus, hares must produce multiple and abundant litters to maintain their population.

Hare populations often rise and fall in regular nine- or ten-year cycles related to predator numbers and food supply.

Hares are not vocal, but they sometimes make clicking, grunting, or whining sounds. They also squeal in terror when attacked by a predator.

APPEARANCE Although the hare looks like a large cottontail rabbit, the two species are in different genera. Hares don't build nests or burrows, their young are precocial—born with furred bodies and open eyes—and they have a differently structured skull than rabbits.

Fur is another difference. Unlike a rabbit's, the hare's coat changes color seasonally, undergoing a spring and fall molt. In summer, the coat is rusty brown above and white underneath. This mottled pelage, or fur coloration, provides some camouflage in summer. Adults have white feet, a white-tipped nose, and white hairs around the edge and inside of their ears. The winter pelage appears all white (hiding the hare in snow) but is actually tri-colored: The fur closest to the body is dark gray, the middle fur is brown, and the visible outer fur is pure white.

Snowshoe hares weigh between 2 and 2.5 pounds and average about 17 inches long. The tail is 2 inches, the ears 3 inches, and the namesake hind feet can reach 6 inches.

FOOD HABITS In summer, hares mainly eat grasses, ferns, and succulent green plants. After the first frost, they switch to woody vegetation such as mountain maple and lodgepole pine needles.

Snowshoe hares aren't highly regarded by tree growers, because they can kill saplings in tree farms, especially in winter.

Hares are coprophagous, which means they produce two kinds of pellets, soft and hard. They eat their soft pellets, produced during the day, to extract additional nutrients. During the night, snowshoe hares deposit hard pellets.

KERRY T. NICKOU

REPRODUCTION Snowshoe hares first breed each year in March or April. Their odd mating behavior is unlike that of any other native North American animal. First, the male hare approaches and sniffs the female. Then he jumps in the air, urinating on her from midair. The female sometimes does the same to the male. Finally, they retreat to the brush to copulate.

The gestation period is just over one month. First litters are usually produced from mid-April to May, and then the mating season begins again. Females average two or three litters per year. In northwestern Montana, females produce an average of 8 young per female per year.

Newborn hares weigh only 1.5 ounces when born but grow quickly, attaining adult weight within 3 to 5 months. If they survive 12 months, they are ready to breed.

HABITAT The snowshoe hare ranges across the northern United States and Canada. Hares prefer dense, second-growth forests, especially lodgepole pine interspersed with fir and spruce. Snowshoes live throughout the coniferous forests of western Montana and at higher elevations in many central Montana mountains. With their large feet, they are adapted to live in deep-snow environments.

HUMAN USE While cross-country skiing, I've often seen snowshoe hare "runs"—narrow, tightly packed trails running through lodgepole thickets. Trappers sometimes set snares in the runs to catch hares for the pelts or for use as bait to trap martens or bobcats. Most likely, early Native Americans also keyed in on these runs to snare hares, which were an important winter food source.

BY JOHN FRALEY

John Fraley is the FWP regional information and education officer in Kalispell.

"752, 753, 754..."

Biologists count waterfowl and big game from helicopters and airplanes to keep tabs on population trends. Turn to page 14 to see why this information leads to better wildlife management. Snow geese at Freezout Lake Wildlife Management Area by Gary Kramer.

Montana Outdoors

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